HOUSECRAFT

PRINCIPLES & PRACTICE

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BY

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AND OTHER BRANCHES OF DOMESTIC ECONOMY

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PREFACE

THIS book on Housecraft is not intended as an exhaustive treatise on the subject, but rather as a guide to those who, whether as students or housewives, are seeking to know the lines upon which a house can be satisfactorily run on a minimum of time and labour. The first few chapters, dealing with the choice, decoration, and equipment of the house, cannot, in a book of this size, be anything more than suggestive, but detailed directions are given for the cleaning of all parts of it. Labour-saving methods and equipment have been advocated throughout, and a possible criticism is that some of the devices recommended are, though excellent, so expensive that no one of merely moderate means can possibly afford them. We would point out, however, that an endeavour has been made to suggest means of saving labour and time that are by no means dependent on a fat purse, but rather on those two rather rare qualities—common sense and method. "Organized common sense," —someone has so defined Science. People are often frightened by this word, not realizing, apparently, that it is really "systematized knowledge of any department of mind or matter." In this book we have tried to adopt the scientific attitude towards Household Management, but we have not attempted to give much of the science relating thereto, only touching upon it as occasion arises. For further study the student is referred to the excellent textbooks dealing with the subject of Household Science.

A word about the questions. These cannot, in most cases, be answered satisfactorily simply from reading the text, but require the student to exert herself in collecting information from other books and by personal investigation. Thus they form jumping-off places, so to speak, for further study along lines merely indicated in the book. In framing them, we have kept in view their practical application, and it is greatly hoped that in working them out the student will gain at the same time valuable help and guidance for such problems as may arise in her own experience. The student would do well to make for herself a list of the books she finds useful when studying any particular point.

We take this opportunity of thanking friends who have given help in various ways, especially Miss M. C. Binnie for typing the manuscript; A. M. Beardsell, Esq., for the photographs on pages

62 and 216; and Miss H. Dennis for some of the line-drawings. *We also thank the many firms* who have kindly lent blocks, photographs, or diagrams and for the courtesy we have invariably received from them.

R. B.
J. E. B.

AUTHOR'S NOTE TO THE FOURTH EDITION

IT is realized that with the continuance of rationing and coupons the instructions given for buying of stores, both food and household, are difficult to carry out. Nevertheless, the basic principles, aiming at quality wherever possible, remain the same. At no time has the housewife been so much called upon to exercise her skill in these matters, and the need for adequate and fundamental training in all departments is as vital as ever.

No attempt has been made to alter the general outline of the book, but a new chapter on Institutional Management has been added and various statements have been brought up to date.

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ILLUSTRATIONS

HOUSECRAFT

CHAPTER I

CHOICE OF A HOUSE

THE most satisfactory way of ensuring possession of a house that approximates to one's ideal is to build one; but as only a small proportion of those who need houses can afford to do this, most people have to make the best of those already built. An intelligent appreciation of the essential points in a house will go far towards making a satisfactory choice. Sometimes, of course, there is no choice at all in the matter, as when one is already settled in a house and cannot make a move on account of house shortage; for the housing problem was never more acute than now. In such cases, there is nothing to be done but to make the best of existing conditions, and to adapt and improve as much as possible wherever necessary.

RENT AND NEIGHBOURHOOD. As conditions are so different in town and country, the selection of a house in a town is dealt with first. The first considerations are, of course, the rent that can be afforded, and the size of the family. Roughly speaking, about 15 per cent of the income is a good average to allow for rent, which varies greatly in different neighbourhoods. The size and circumstances of the family will have an important bearing on the neighbourhood chosen. Nearness to railways or other means of travelling; facilities for shopping; education; medical attention; access to parks and other open spaces—all these, as well as social life and business duties, require consideration.

The necessities of the household must be studied before any decision is made; it sometimes happens that an otherwise suitable house is found, too late, to be too far away from a particular centre. Where there is a growing family it is often desirable to take a house in a somewhat less fashionable district, in order to obtain better accommodation value for money. This allows more room, and greater freedom for children, especially if, as is often the case, there is a garden in which they can play. The health of the future citizens is of far greater importance than status of neighbourhood. Neighbourhood is more important in towns than in the country, owing to the nearness of other houses, factories, trade premises, and main thoroughfares. Houses situated on railways or on busy streets are much less desirable than those in quieter neighbourhoods.

Whenever possible, the latter should be chosen, as the constant noise and vibration have a bad, if unsuspected, effect on the nerves and bodies of those exposed to it. Wide streets and open spaces are preferable to narrow streets and tall buildings. Houses and flats should be well clear of factories and other trade premises; and if tall buildings are inevitable, those on corner sites not overlooked by other buildings are preferable. Houses having rows of small cottages immediately beneath their windows are to be avoided, owing to the smoke emitted from the chimneys.

SOIL. It is sometimes difficult to know upon what soil any particular town house is built, especially in an old town. The general geological features may be ascertained by consulting the special district maps for the purpose, but occasionally it is impossible to find out. Some effort should be made to ascertain whether any particular site is a filled-in ashpit or refuse dump; these are frequently built on, and are most undesirable, owing to the danger not only of foul gases but also of damage to structure of buildings owing to the settling of the ground. Filled-in marshes and hollow places should also be avoided if possible, and houses built on higher ground chosen in preference.

ASPECT. It is not always possible to choose the most satisfactory aspect, owing to the direction of streets, but some part of the house should be open to the sun some time during the day. Many town houses and flats face north, only the kitchen premises getting sun—these, especially where there are children and adolescents, are not very good. An aspect satisfactory in itself, but where high buildings block the sunlight, is equally bad.

STRUCTURE. When the site, neighbourhood, and aspect have been selected, great care must be given to the details of the house itself. The actual structure is most important, as the comfort of the house depends greatly upon this. No amount of money spent on labour-saving devices, careful furnishing, and decoration will make a really satisfactory home out of a badly constructed house, and there will be eternal difficulties in respect of draughts, sagging floors, or cracked walls. For every reason, jerry-built houses should be avoided, however picturesque they may appear. Old houses, whatever their deficiencies in planning and ease of running, are always solidly and honestly built—otherwise they would not still be in existence.

The prospective tenant or house-buyer cannot, of course, see for himself the quality of the construction, but he can find out by examining the house carefully whether it is sound or not. Cracks in the basement walls, and sagging doors and frames, mean that the foundations are unsound, and that the house is settling and will continue to settle. Damp patches show that the damp-proofing course is unsatisfactory, or that the outside facings are weak, and are letting the rain through. The thickness of the walls should be

sufficient for the neighbourhood, but the actual thickness depends on the part of the country in which the house is situated. North-country houses and those near the sea or mountains are, of necessity, much more solidly built than houses in milder districts. Hollow walls, when properly erected, and fitted with effectual damp-proof courses, are very warm and dry; and most new houses are now built with them. Inner walls should be well built, not of lath and plaster, and should be reasonably soundproof.

All woodwork—floors, doors, windows, skirtings—should be sound and dry. All joints should fit closely, and there should be no cracks. Badly fitting windows and doors, cracks, and open joints mean that insufficiently seasoned wood has been used, and there will be much trouble in keeping the place clean and comfortable. A musty smell and a dry, crumbling condition of any part of the woodwork indicate dry rot, a state brought about by the growth of a mould in flooring or woodwork that is damp and insufficiently ventilated. Where it exists the ventilation must be attended to, and the affected part replaced with new wood after the rest of the floor has been treated with a preservative to prevent possible spreading. There should be plenty of window space, and all windows should open.

The general plan of the house must be considered with regard to ease and economy in management. Square houses are usually compact, and are easier to run than those with long passages and rooms separated by long distances, the latter type having much more waste space, which, though of little value, has to be kept clean. Tall narrow houses have several flights of stairs, and therefore much traffic up and down. Broad stairways, gradual in ascent, with short, straight flights, are preferable to steep and narrow ones. "Winders" are most undesirable—they are dangerous, awkward, and difficult to cover.

Cellars are useful, and, in well-built houses, they are a protection against damp; but basement kitchens are unsatisfactory, as the dining-room is generally on the ground floor. Where they exist, some arrangement might be made to minimize labour by putting in a service lift, or by making a basement dining-room.

The arrangements of the kitchens, scullery, pantry, and larder should be convenient; it is best if the kitchen is near the dining-room. There should be ample cupboard room in all parts of the house, and also some provision for storing boxes and trunks, and articles not in frequent use. Such a room is often provided in the roof, and reached by a trap door; but this is not advisable, as it is extremely difficult to haul trunks and other bulky goods up a ladder and through the door. Built-in furniture and other fitments are most convenient, but may add to the rental.

Adequate and convenient arrangements for the delivery and storage of coal and wood are necessary.

SANITATION. The sanitary condition of the house must receive most careful examination. In towns this is usually on a water carriage system; the house drains should be inspected and tested by experts. It is wise to procure a plan, if possible, showing the direction of all the drains. The type, number, and size of the water closets, and the capacity of the cisterns, should be ascertained, and all traps and fittings inspected. There should be at least two water closets in any house larger than cottage size, and they should be of modern type and flushed from a cistern of two to three gallons capacity. (Figs. 1*a* and *b*.)

WATER SUPPLY. This is generally on the constant supply system. The degree and nature of hardness of the local water, and any peculiarities (such as excessive iron) it may have, should be ascertained. The standard of purity is generally high, but this should be verified by

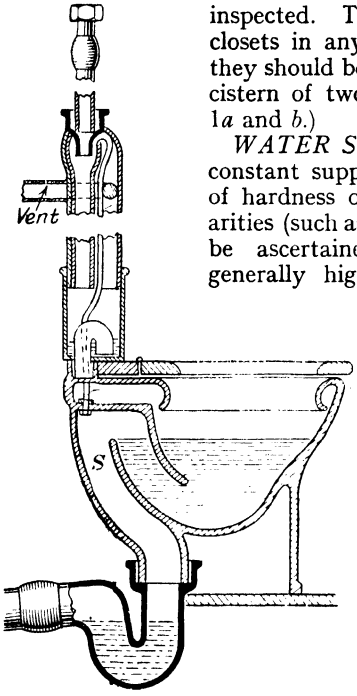


FIG. 1*a*.—SIPHONIC CLOSET.
in which the pan is emptied by the siphonic action set up through a rush of water down S.

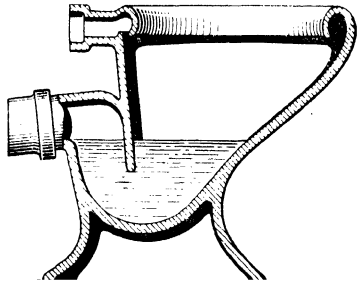


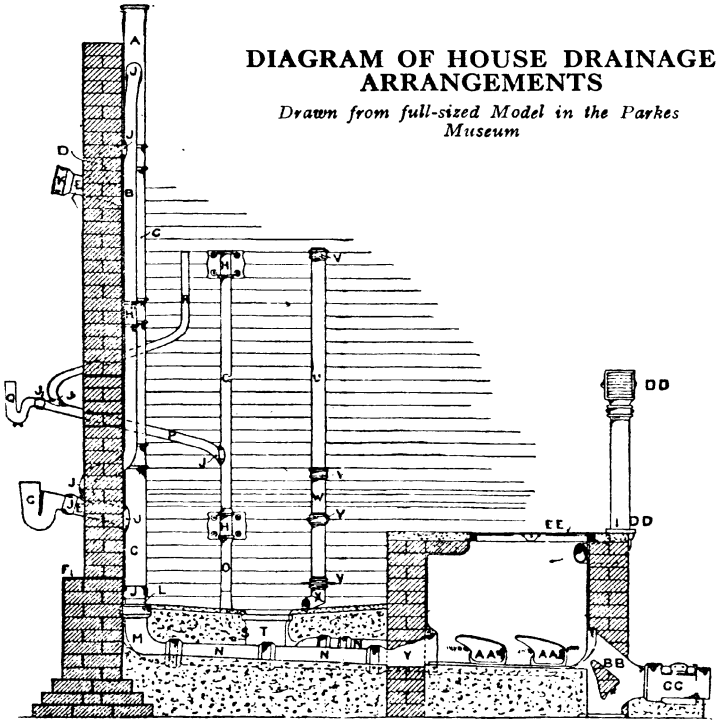
FIG. 1*b*.—GOOD TYPE OF WASHDOWN CLOSET.

inquiries at the local water board. The storage cistern should be of adequate size and of suitable material (zinc, galvanized iron, enamelled iron, or slate), should be covered, provided with an overflow pipe, easily accessible, and guarded from any possible risk of contamination by sewer gas. The ball-taps should be in good order.

LIGHTING, HEATING, AND COOKING. The local price of gas and electric light and power should be ascertained, and

DIAGRAM OF HOUSE DRAINAGE ARRANGEMENTS

Drawn from full-sized Model in the Parkes Museum



REFERENCES

A. **Soil Pipe,** carried up as ventilator.
B. **Ventilation** or **Anti-siphonage Pipe** from closet branches, carried into soil pipe above top closet.
C. **Soil Pipe,** 4 in. lead.
D. **Ventilation** or **Anti-siphonage Pipe** from upper closet branch.
E. **Closet Branches.**
F. **Damp-proof Course** in wall.
G. **Anti D Closet Trap.**
H. **Expansion Joint** in lead pipes.
J. **Wiped Solder** or **Plumber's Joints.**
K. **Brass Thimble** for connecting earthenware closet trap to lead soil pipe.
L. **Brass Ferrule** for connecting lead soil pipe to stoneware drain.
M. **Stoneware Bend,** 4 in.
N. 4 in. **Stoneware Pipes** forming house drain.
O. **Sink** or **Lavatory Waste,** with expansion joints.
P. **Branch Waste** from sink or lavatory.
Q. **Lead Dubois Trap** for bath, lavatory or sink.
R. **Ventilation** or **Anti-siphonage Pipe** from lavatory branch. This could be connected to the waste pipe *O* above the highest lavatory and the pipe *O* carried up above any windows or openings.
S. **Back Inlet** to gully receiving sink waste and discharging over trap water in gully.
T. Ordinary **Yard Gully.**
U. **Rain-water Pipe,** galvanized iron.
V. **Joints** in iron pipe.
W. **Offset** in iron pipe, to follow the thickening in wall.
X. **Shoe** for directing rain-water to gully.
Y. **Chute,** to enable drain rods to be more easily passed up the house drain.
A A. **Curved Channel Pipes** leading branch drains over and into soil channel in manhole.
B B. **Disconnecting Trap** with raking arm closed with a piece of glass, which can be broken if the trap gets choked or the drain to the sewer requires cleaning.
C C. **Pipe with inspection cap** used for inserting drain stopper when testing the manhole.
D D. **Fresh Air Inlet** or **Mica Flap Inlet Ventilator** to manhole, house drain and soil pipe. The joints in the pipe are made with lead tow.
E E. **Manhole Cover,** secured with non-setting plastic cement, in yard at a higher level.

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FIG. 1 (*c*)—DIAGRAM OF HOUSE DRAINAGE.

meters should be in a convenient place. The internal fittings are generally a matter of private arrangement. The heating and cooking and hot water supply facilities are dealt with later, and need not be considered here. In looking over a house, however, it is necessary to pay great attention to these features, as much of the work of the housewife is concerned with them.

COUNTRY HOUSES. Generally speaking, rents and rates are lower than in towns.

COUNTRY HOUSES—SITE AND ASPECT. In the country more is known, generally, about the soil, and it is important to know upon what kind the house is built. Clays are cold and damp, owing to the fact that water does not escape; gravel, chalk and sandy soils, being porous, are much drier, but if the surface layer is only shallow, with an impermeable layer of clay below, these soils also are damp, owing to the collection of ground water, especially in hollows. Such hollows should always be avoided, and sites on rising ground or hills chosen instead. Houses on the side of a hill are, as a rule, more sheltered than those at the top. The best aspect is south-west, which ensures plenty of sun, but is exposed to the prevailing winds in these islands. Trees, however, provide shelter, but they must not be too near the house, or they will cause dampness by preventing the free circulation of air.

SANITATION (COUNTRY). There is always a difficulty in deciding upon the best means of carrying out sanitation in country districts where there is no sewage system. The commonest methods are dry earth system, cesspool, septic tank, or bacteriolytic method.

The Dry Earth System depends upon the fact that excreta mixed with fine dry *surface* soil is readily decomposed without odour, and becomes fit for manure in a short time. The decomposition is carried out by soil bacteria, which do not exist at all at depths below two feet from the surface, and are most active a few inches down, hence the necessity of top soil, and not damp earth from low down, or ashes. The dry earth system is worked as follows. A deep pail or bucket of some non-absorbent material is placed below a suitable seat, and enclosed in a well-ventilated building, having a concrete floor with a fall towards the door. (Fig. 2.) A supply of fine dry earth is arranged, and a thin layer is scattered in the pail after the use of the closet. Once a day the bucket is emptied and the contents lightly buried in a *shallow* trench, where they resolve themselves into fine mould within a very short time. The filled-in trench can be planted, and is very fertile; sufficient ground is, of course, necessary, so that the same piece is not redug too frequently, but Professor Ramsey-Smith states that half an acre would suffice for a thousand people for a year. The dry earth system, if carried out properly, is perfectly harmless to the water supply if this is derived from a well, and is one of the most satisfactory means of rural sanitation.

Slops can be allowed to run into a cesspool, which will require emptying frequently; or they can be thrown on to the garden. To avoid water-logging any one patch, a different part should be chosen each day.

The Cesspool System. This consists of an underground tank, supposed to be watertight, into which all sewage flows. Unless

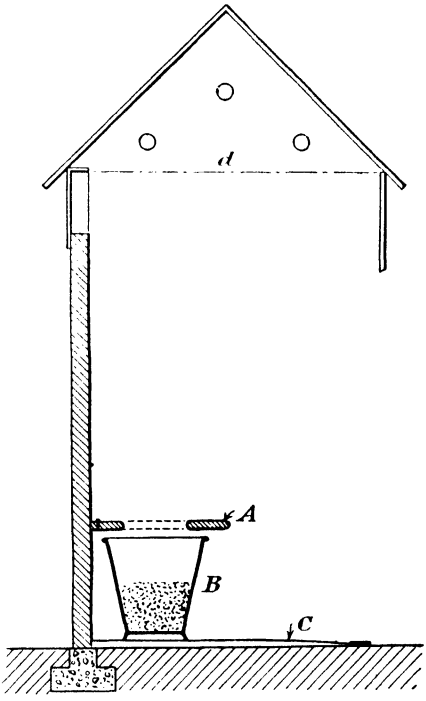


FIG. 2.—DRY EARTH CLOSET.
Note sloping concrete floor *C*, zinc pail *B*, hinged seat *A*, and ventilated roof *d*.

emptied at frequent intervals, it is a source of great danger, owing to leakage, which almost invariably occurs, and the consequent contamination of well water supply. As water travels long distances underground, a cesspool may infect the wells within a large area.

The Septic or "Bacteriolytic" Tank is a newer and apparently a very satisfactory way of dealing with the sanitation question. It depends on the fact that sewage is broken up by (1) anaerobic bacteria, i.e. bacteria working in the absence of air; (2) aerobic

bacteria, which require air. The second kind deal with the liquid formed by the first. The septic tank, therefore, is an underground tank with two compartments connected with each other, the second one being ventilated and with an overflow. The entering sewage becomes covered with a thick scum, underneath which the anaerobic bacteria grow and multiply, and break up the solid matter into a thin liquid which passes through to the next compartment, where aerobic bacteria act on it and continue the process of purification. After their activity, the liquid is sufficiently pure to be allowed to drain away, without any risk of its causing contamination. There are a few technical details in connection with the installing, but the whole thing is simple and easily set-up. Being supplied by the usual water closet system, it can be installed in place of a cesspool, and after the first cost, it acts automatically and requires nothing more spent on it, and no attention beyond an occasional clearance of the inlet pipe from possible obstruction, which is done through a cleaning arm at the surface of the ground.

WATER SUPPLY. This may be supplied by a local company, or may be obtained from wells. Well water should be tested by experts, and the well itself should be deep, and situated on much higher ground than the cesspool, if there is one, and also out of reach of any possible contamination by neighbouring cesspools or farmyards. Pumps are better than a windlass and bucket, as there is no chance of contamination from above ; where there is no pump there should be a protecting wall and a close-fitting cover. Receptacles for collecting and storing rain water should be covered, and inaccessible to animals and children.

LIGHTING AND HEATING. In some country districts gas and electricity are obtainable, but in some places there is neither. The possibility of installing a private plant for supplying electricity, petrol-gas or acetylene should not be overlooked. The price of fuel is generally higher than in towns, but wood may be more easily obtained. There should be adequate outbuildings, not visible from the front entrance or the lawn. In other respects, the remarks on town houses apply to country ones—distances from stations, shops, etc., must be considered with great care, although now access to towns is considerably facilitated by motor transport.

CHAPTER II

LIGHTING AND HEATING

ADEQUATE lighting in a dwelling house is of the utmost importance. Sunlight and fresh air prevent damp, destroy micro-organisms, and are essential to the health and happiness of the occupants. Ample window space is necessary to allow as much light as possible to enter the houses, and the windows themselves should be large enough for the room, and placed in suitable positions, so that the whole of the room gets light. There are various types of windows, such as sash, casement, French, the merits of any individual one being dependent on the type of room for which it is used. Generally speaking, it is advisable to avoid windows which are composed of small panes—the old-fashioned leaded windows and others. Not only are these more difficult to clean, but the divisions obstruct light; and though the effect is sometimes picturesque, the interiors are generally rather dark.

There should be no dark corners in a house. Plenty of light prevents accumulation of dirt and dust, and some arrangement should be made to get as much light as possible into places where there are no windows, as by whitewashing, or painting in some colour that will reflect light. Staircases should be well lighted, to prevent accident. Sometimes they are placed where it is impossible to light them adequately from a window, and in such cases they should be light in colour of woodwork and covering. To get sufficient light into basement rooms, the area walls should be whitewashed, or tiled in white; in narrow areas glass reflectors are sometimes arranged so as to throw light into the rooms below.

Although the householder must generally accept the windows as he finds them, much can be done by proper management to admit the maximum amount of light. Windows should not be blocked by large pieces of furniture, and thick, heavy curtains should be avoided in small rooms; large plants also obstruct light. The glass must be kept clean, both inside and out, or much light will be retarded; besides, the dismal appearance of dirty windows has a depressing and demoralizing effect on the occupants behind them.

VENTILATION. Air is composed of a mixture of gases, of which oxygen and nitrogen are the chief. The following is the average composition of air, though the proportions vary slightly, according to locality and other factors, and to the time of day,

especially in towns, night air being generally purer than that of midday.

Oxygen	21·00 %
Nitrogen	78·96 %
Carbon dioxide	0·04 %
	100·00 %

Traces of a rare gas, argon, are also present, and there are varying amounts of sulphur dioxide, sulphurous and sulphuric acids, and sulphuretted hydrogen. These sulphur compounds are produced by the combustion of fuels of all sorts, practically all of which contain sulphur in some form or another as impurity. The sulphur dioxide formed is converted to sulphurous and sulphuric acids, which are injurious to plants and animals, and attack stone and metal; these effects are noticeable in large towns and in the neighbourhood of factories. Domestic coal fires and gas also produce a small amount of sulphurous and sulphuric acids, but practically all of it has been found to be absorbed by the whitewash on the ceiling and rendered harmless.

Carbon dioxide is produced also by combustion of any sort, and by the breathing of animals, and is given out by plants at night time. In the open air, however, the proportion is kept fairly constant by the distributing influence of rain and wind, and the absorption of some by plants during the day. In closed spaces, however, such as rooms where many people are gathered together, the percentage of carbon dioxide in the air of the room may rise considerably, since each individual breathes out at least 0·6 cu. ft. of carbon dioxide an hour.

The unpleasant effects of an overcrowded room are due not to the proportion of the gas present, but to the organic impurities given off from the lungs and throat in speaking and breathing, and to the stagnation and humidity of the air. Recent research has established the fact that if the air of such a room is kept constantly on the move, as by an electric fan, very high percentages of carbon dioxide can be present without any unpleasant effects. The gas itself, though poisonous in a pure state, has little effect at the concentration liable to occur in a room, the organic matter being far more harmful; but as it is impossible to measure the organic matter, and easy in the case of carbon dioxide, the proportion of the latter in the air of a room is taken as an index of its pollution.

The amount of moisture present, i.e. the humidity of the air, is an important factor. The higher the temperature of the air, the more moisture it can hold without becoming saturated. As water vapour is constantly being given off by animals from the lungs and skin, the proportion in the air of a closed room will rise round each individual. As long as it remains unsaturated, little

discomfort is felt, and, the higher the temperature of the room, the longer it will take for the air to reach saturation point. Once it reaches this, evaporation from the skin cannot continue and feelings of great discomfort are experienced, similar to those felt on a hot, moist day. If, however, the air of the room is kept moving, no part of the air is long enough in contact with a person to become saturated, so that the natural evaporation proceeds unchecked. It is equally important to notice, however, that if the temperature of the air is high, evaporation from the skin is hastened, and almost equally unpleasant effects are experienced.

For adequate ventilation, therefore, three points are to be observed. (1) Enough air space should be provided for each person to allow sufficient dilution of the carbon dioxide. The usual amount allowed is 1,000 cub. ft. each person, and about 2,000 to 3,000 cub. ft. of fresh air an hour. The frequency with which the air of a room should be changed in order to get this is, of course, dependent on the size of the room, as a large room obviously requires its air to be changed less often than a small one for the same number of people, and it is essential that draughts be avoided. A burning fire or a good gas fire keeps a current of air constantly moving up the chimney, drawing fresh air in from outside ; hence the importance of the chimney as an aid to ventilation, even without a fire, for the wind blowing over the top causes a reduction in pressure in the chimney, and a consequent up-draught which ventilates the room. [See *Habitable Rooms and Natural Radiation* (1942).]

(2) The air must be kept moving. This is done by currents set up through the doors, windows, and chimneys in the ordinary houses, but in larger buildings or big rooms some supplementary means are essential, especially where there are likely to be many people congregated. Electric fans or specially constructed ventilators in the walls are necessary.

(3) The temperature of the air must be such that it is neither too damp nor too dry. This is influenced largely by the method of heating, and the best results are obtained when the air itself is not heated. Methods dependent on radiant heat do not affect the air temperature very much and are therefore good. Plenty of fresh moving air in and about our houses at all times prevents dampness, guards against over-heating and chill, and contributes to sound health.

Windows, doors, and chimneys are the natural means of ventilation, but there are various devices for aiding ventilation where this is deficient or inadequate. For rooms, a movable glass or metal valve over the door is sometimes used, and the Hinck's Bird ventilator at the window admits air without draught ; in large halls and rooms, the Tobin's tube and modifications of it are employed, as well as Sheringham valves, and, in one-story buildings, the " McKinnell's " ventilator. For places, such as lavatories

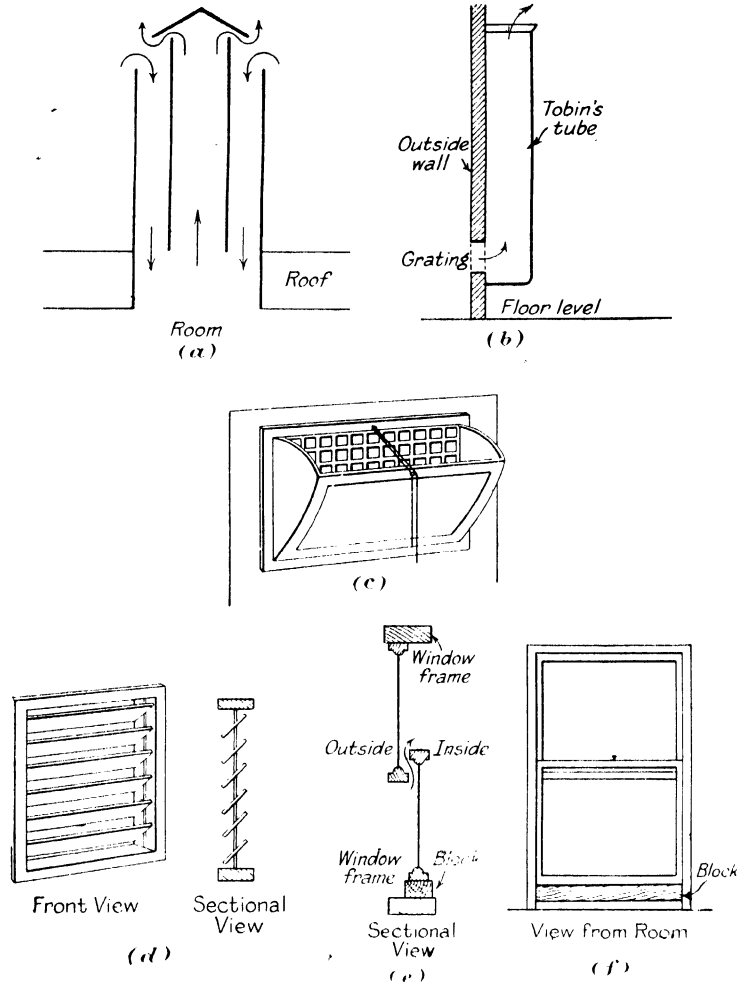


FIG. 3.—VARIOUS AIDS TO VENTILATION.

(*a*) McKinnell's ventilator for one-story buildings such as clubrooms, halls, etc.
(*b*) Tobin's tube, for ventilating large rooms
(*c*) Sheringham valve. (*d*) Louvre ventilator. (*e* and *f*) Hinck's bird ventilator.

and closets, where constant change of air is necessary, a " Louvre " ventilator, made of slats of glass fixed like the spars in a venetian blind, is fixed in place of one pane of the window. This allows access to plenty of air, but no rain can enter.

In large buildings, mechanical means of ventilation are employed, by which air is conducted into the building, and left to find its way out ; or else the impure air is drawn out, making room for fresh air to find its way in. In the first case, the incoming air is often purified and slightly warmed before being distributed.

ARTIFICIAL LIGHTING. Adequate lighting in the house is essential, for both safety and convenience. Economy may be effected by arranging less powerful lights for such places as the hall, staircases and passages, but there must be sufficient illumination where required for working, or reading, and in the kitchen. Where electricity is used, it is easy to arrange for lights where they are most wanted, so that there is less waste of light. With other forms of illumination, especially oil, it is not so easy to provide light everywhere, unless a plant has been installed, but small fairy lamps giving a glimmer are very useful.

Coal Gas. This is still in use for lighting, though almost universally superseded by electricity. The gas light is provided by an incandescent mantle which is fairly clean in use, and when properly adjusted and looked after gives a good light The luminosity of the naked gas flame is due to the particles of unburnt carbon, heated to white heat, which are set free during the burning of substances called hydrocarbons, which are contained in coal gas. Formerly, coal gas had to conform to a standard of illumination, known as candle power, but since the use of the mantle has increased, the illuminating power of gas is much less important. In lighting by incandescent mantles, a mixture of gas and air is burnt on the principle of the Bunsen burner, i.e. in such proportions that complete combustion, as evidenced by a blue non-luminous flame, takes place. A mantle is made to fit over the flame in such a way that it comes within the area of most complete combustion, which is just in the outer edge of the flame. The heat at this part is sufficient to raise to white heat the material of which the mantle is composed, when it gives out an intense light. The mantles themselves are made first of ramie thread or silk, which is woven into shapes and dipped in a solution of *thorium* and *cerium nitrates*. The mantle is then burnt, leaving only a white substance consisting of thorium and cerium oxides, in the form of the original woven mantle. The fragile shape is then dipped into collodion for safety in transit, this collodion being burnt off when the mantle is first put up. The burners for incandescent gas are made both upright and inverted ; the former have the disadvantage of throwing a shadow down, and the inverted type is preferable, as it gives a better illumination

where it is wanted. The fumes from the burning gas, however, tend to corrode the metal fittings in time.

Gas illumination is an aid to warming; there is a considerable rise in the temperature of a room in which gas has been burning, and the constant current of hot air rising towards the ceiling keeps up a constant inflow of outside air. The black patches on the ceiling of rooms in which gas is burnt are due to dirt carried up by this hot air current. In burning, however, the gas uses up oxygen, and gives off products of combustion; this is one of the disadvantages of gas. Another disadvantage is the necessity either of leaving it burning when the room is left temporarily, or of having to relight

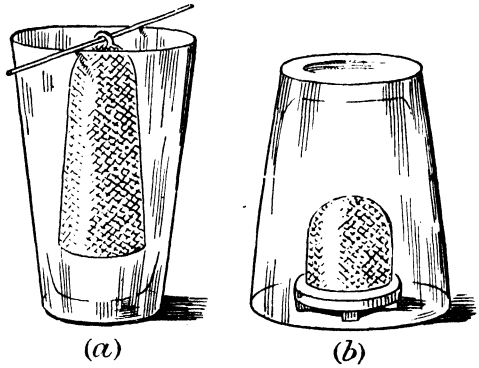


FIG. 4.—PROTECTING MANTLES WHEN CLEANING BURNERS.

it if it has been turned out. The use of by-passes greatly simplifies this difficulty, but there is now on the market a pneumatic device which is worked from the door, somewhat like an electric switch, and makes it possible to turn the gas on and off without difficulty.

Both the price and the quality of gas vary according to locality. An insufficiently purified gas is inclined to smell, and to choke the burners very quickly. In order to get as good light as possible from *any* coal gas, the burners should be cleaned periodically. This is done by carefully removing the globe, and then the mantle, which should be suspended from a hat pin inside some vessel to prevent breakage, as a used mantle is extremely delicate. (Fig. 4.) An inverted mantle may be stood upside down on its fireclay ring in a safe place. The separate parts of the burner can then be unscrewed, and the fine holes through which the gas enters cleaned out with a pin; there is generally a piece of wire gauze to prevent "striking-back," and this may be brushed. All metal parts should be brushed or wiped quite free of deposits, care being taken not to injure the fine adjustments by which the entry of air and gas is

regulated. The porcelain protector of an inverted burner sometimes becomes sooty, and this may be washed; it should be thoroughly dry before being replaced. After assembling the burner, light the gas and adjust the air and gas supplies till there is a good blue flame, with no yellow tinge. Turn out the gas, and put back the mantle. Generally, a little more adjustment is necessary; after this is done, replace the globe. If it is an inverted one, care should be taken not to screw it on tightly, or it will break when the gas is burning, owing to expansion. Some inverted globes are fastened by a spring which encircles them entirely, and automatically expands with the globe.

Electricity is without doubt the most convenient means of lighting, and has now become much more widely accessible. It is clean and bright, and as there is no combustion, no oxygen is used up, and no products of combustion are produced. For the same reason, there is no heating effect, the light being entirely due to an incandescent wire enclosed in a vacuum, or in a gas-filled bulb. The lamps have greatly improved in recent years—the earliest form had a carbon filament (still used in some lamps), which did not last very long; the usual lamp now sold has its filament made of one of the rare metals *tantalum*, *titanium*, *tungsten*, or *osmium*. For large rooms, factories, and other places where extra light is required, high-powered lamps, known as "half-watt" lamps, are procurable.

Electricity is by far the most useful form of lighting; as it is adaptable to every conceivable purpose, bulbs may be fixed wherever required, and at any angle, either as fixed lights or movable lamps. They should, however, never be placed in a line with the eyes, as the glare is liable to cause damage. If it is necessary to have them in such positions they should be shaded, or be in opal glass bulbs. All strong lights should be shaded, or covered with reflectors, which will send the light down by reflection off the ceiling; or translucent shades of alabaster or glass may be used. Electricity is supplied to householders in units called *amperes*, at a pressure of so many volts; amperes multiplied by pressure become *watts*; e.g. 10 amp. at pressure of 100 volts = 1,000 watts. If this current runs for one hour, it is called a *watt-hour*; and this amount is the Board of Trade unit upon which a charge is made. The charge for lighting is higher than for power electricity.

To summarize—

1 ampere = 1 unit of electricity.
1 volt = 1 unit of pressure.
Amperes × voltage = watts.
10 amperes × 100 volts for one hour } = 1,000 watts = 1 kilo watt. = 1 kilowatt hour = 1 B.T.U.

Current is dangerous if supplied at a higher pressure than 250 volts; the main from which the current is supplied to the separate houses carries it at a very high pressure, but before it enters the

house, it is taken through " transformers " which convert it from a small current at high pressure to a larger one at a lower pressure, somewhat in the same way as the high pressure of water flowing through a small tube may be converted to a lower pressure in a larger tube, the total volume being the same. That is, 50,000 watts, flowing in the main as a current of 25 amp. at 2,000 volts, may be converted in the transformer to a current of 250 amp. at 200 volts.

The " plant " in the house is incapable of carrying as high a current as that in the main, but it sometimes happens that an accidental over-supply occurs. In order to prevent the destruction of the plant, a thin, easily fusible wire is placed where the current enters the building. This thin wire will carry the normal current, but any excess will so heat it that it will melt, or " fuse," thus cutting off the supply and preventing damage. These " fuse wires " are made of lead or tin, and are placed at various other places in the system, to guard against accidental over-supply anywhere. There is generally a fuse-box in which the fuse wires are grouped, and which control various lights in the house. They should be labelled, so that should a fuse occur anywhere the lights affected can be at once identified. Every housewife should know how to manage the fuses, as damage is sometimes quite easily reparable ; but if there is any doubt, an electrician should be called in. Fuse wire is sold in 5 amp., 10 amp., and 15 amp. thicknesses, for lighting, heating, and power respectively.

Electric light wires buried in the walls are difficult to get at, and various better methods of wiring are in use. Wall plugs for occasional use are useful in various places. With ordinary care, and by switching off the light when not required, electric lamps may be kept in good condition for a considerable time. Finally, however, they fail to give a good light, and require renewal.

For living rooms, lamps of 30–50 candle power are best ; for more intense lighting, the gas-filled (half-watt) lamps are provided, but these are too powerful for ordinary rooms. For places where a subdued light only is necessary, such as passages, or lavatories, where only sufficient light to see one's way is required, small lamps burning about 1 unit in 50 hours are obtainable. These lamps give a reddish glimmer, and they cost considerably less to burn than the usual lamp. It is very useful, and saves much waste, if lights in halls and stairways have two-way switches, so that they can be turned off and on from different points.

Oil. In many places oil is still the only means of lighting, unless expensive plants are installed. Paraffin is the oil generally employed, but recently petrol has become more common.

There are two distinct ways in which oil may be used for lighting—(*a*) by using a wick, i.e. by capillary attraction ; (*b*) by vaporizing the oil, and burning it with air.

Capillary attraction is the older form; the lamps mentioned in

the Bible consisted of flat vessels, sometimes with a kind of spout, in which was placed a wick of some sort. All the ordinary wick lamps are merely improved forms of the same principle. These lamps give a soft and pleasant light.

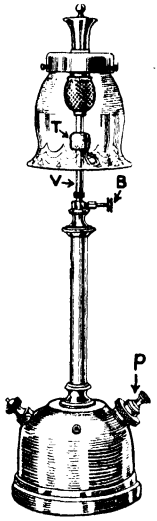
SELECTION AND CARE OF OIL LAMPS. In choosing oil lamps attention should be paid to the following points: (1) The base should be well weighted, to minimize danger of capsizing. (2) The container should be of metal, as there is less risk of breakage. (3) The burners may be round, duplex, or single, and should be well supplied with air. The duplex and single wick are perhaps easier to manage than the round; the round wick gives the best light for the amount of oil consumed. The wick should fit the holders well, but not so tightly as to make it difficult to move. (4) The chimney should be a good make of fireproof glass, and should fit the chimney holder easily. If too tight, it will break when the lamp is lighted, owing to the expansion of the glass. (5) All oil lamps should be fitted with a patent extinguisher, which should be kept in good order, and always used. (6) A separate opening in the reservoir for filling facilitates the operation.

The paraffin used for lamps should be of good quality; at the present time nearly all kinds are up to an equal standard of purity. Paraffin is cheaper if bought in bulk; it should be kept in the proper metal cans, well stoppered, and in a cool place, preferably in an outhouse. A cheap oil is likely to have a lower and therefore possibly dangerous flash-point than is legally allowed. By "flash-point" is meant the temperature at which an inflammable vapour is given off. Lamp oil, at ordinary temperatures, is not inflammable, but becomes so on heating. Crude, unpurified paraffin oil consists of mixtures of oils, some very inflammable, and it may give off these vapours at almost any temperature; but as this is extremely dangerous if used in lamps, paraffin must be purified so that no inflammable vapour is given off until a temperature of 73° F. is reached, i.e. any constituent oil likely to volatilize below this must be removed. In the burning of the lamps, great heat is given out, and lamps are generally constructed to prevent the heat from reaching the oil and raising it to its flash point. If this should happen, and the paraffin start to burn, water should never be used to put it out, as the burning oil will float, and spread with great rapidity. Sand, earth, or a heavy woollen rug, such as a hearthrug, should be thrown on in order to exclude the air, without which combustion cannot continue.

Paraffin lamps require a great deal of care and attention if they are to burn well without odour and give a good light. They must be trimmed and filled daily, and no loose oil must be left on them anywhere, or it will smell unpleasantly when the lamp is lighted. In round-wick lamps, the spreader must be kept very clean and free from any charred matter, or it will cause smoking. The charred

part of wicks should be removed with paper ; cutting nearly always leaves an uneven edge, causing a jagged flame.

When the lamp is lit, it should always be turned low at first, partly to allow the glass to get heated slowly, and partly because the flame will be " drawn-up " after lighting, and unless carefully watched, will begin to smoke. Wicks should be renewed before they get too short to be properly immersed in the oil.



By kind permission of The Tilley Lamp Co.

FIG. 5.—A PRESSURE LAMP BURNING PARAFFIN.

B. Button operating fine wire or cleaning vaporizer.
V. Vaporizer.
T. Torch by which methylated spirit is lighted for starting ignition.
P. Pressure pump.

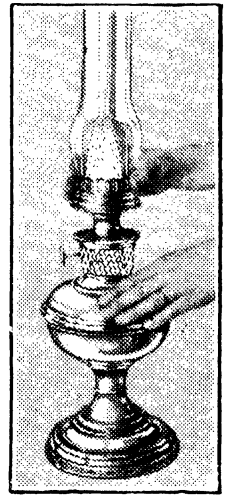


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FIG. 6.—A SAFE WICK LAMP with an incandescent mantle.

Lamps give out an intense heat ; thus they help in warming a room in cold weather. They use up oxygen in burning, however, and their use is always attended with a certain risk, especially where there are children. They take, moreover, time and trouble to keep clean, and the light, though soft, is scarcely good enough for sewing or other close work, unless one monopolizes the lamp. A shade is necessary because there is too much glare on a level with the eyes from an unshaded lamp, and this is most injurious. The shade should be opal, tinted, or etched glass, to disperse the light, and to give a soft glow.

Vaporized Paraffin or Petrol. Lamps in which paraffin or petrol

vapour is mixed with air are very much superior to the ordinary oil lamp. The principle upon which they work is more or less the same in all cases, and is similar to that in the ordinary " Primus " stove. The oil is contained in a reservoir, and forced by pressure through a fine orifice to the burner, which has been previously heated. The oil vaporizes and catches fire, continuing to burn with a hot blue flame, or on an incandescent mantle, as long as the pressure on the reservoir is continued; this is kept up by pumping at intervals, These lamps give a good light, and burn for a considerable time without refilling. They are obtainable in various designs, with attractive shades. (Fig. 5.)

A new wick lamp on the market burns paraffin oil without pressure, and has an incandescent mantle. The makers claim that it is absolutely safe and cannot explode. (Fig. 6.)

Petrolite. In this lamp the petrol is soaked up into a clay container, no free petrol being present. A current of air is caused to pass through the container, and arrives at the burner mixed with petrol vapour. This burns, on an incandescent mantle, with a good light, and is perfectly safe, as the lamp goes out if knocked over or dropped, and there is no free petrol to catch fire. The only disadvantage is that, in order to maintain sufficient draught, rather a long chimney has to be used.

Small lamps for halls, night lights, etc., are on the market in all shapes. A recent one is of aluminium, burning vaporized paraffin, and is said to be most efficient. Others are mostly small editions of the ordinary wick lamp; but there is one make in which the vapour from saturated felt is burnt, thus eliminating all danger of fire in case of accidental overturning.

Petrol Lighting (petrol air gas) is frequently installed in country houses, and worked by a plant, giving a good light.

Acetylene is sometimes also installed, and worked by a generating plant. The greatest objection is the smell, and next the necessity of frequently removing the used carbide. Acetylene gives a steady white light which is very brilliant, and it does not give out carbon dioxide on burning.

Candles. Candles are made of some waxy material which melts and rises up a central wick, where it vaporizes and burns. They are a very ancient form of lighting; the old rush light and tallow dip gave a very feeble illumination, and since no way was found of consuming the ash of the wick as it burnt a very smoky flame resulted. Modern candles are made of sperm, or more generally of paraffin wax of high melting point; beeswax and tallow are also used, but the tallow ones are inferior to paraffin wax. Stearine candles, made of paraffin wax and stearic acid, are harder than the ordinary candle. The wicks are made of woven cotton, a thread on one side being pulled tighter than the rest; this, when burning, contracts more, and pulls the wick over, so that the end

of it is always in the outer zone of complete combustion ; thus all ash is consumed, and the flame burns clearly and without guttering. They are seldom used as the chief source of light nowadays, as they are smoky, and dangerous in use unless great care is taken. Their light, however, is very soft, and they are frequently used for illuminating a dinner-table ; and in country districts for bedrooms.

The luminosity of a candle flame is due to the particles of unburnt carbon released in the burning of the wax, which consists of hydrocarbons. These particles of carbon are raised to a white heat and thus give out light. They are deposited as soot on any article held over the flame. Candles are sold by weight, the number weighing one pound indicating the size. They may be obtained either white or coloured, and with plain or self-fitting ends, the latter being more expensive.

The disadvantage of candles, apart from the inadequate light, is the risk of spilling grease. Candle-sticks with low holders and broad bases are better than tall ones for carrying about. Some candlesticks are made with guards, which are useful in shading the eyes and in protecting the flame from draught.

Tapers may be mentioned here, though they are not a source of light. They are made of twisted cotton dipped in wax, and are useful for lighting gas, etc. They should always be used in a holder, as otherwise they flare, and drop wax about very readily.

Candle-power. It may be well here to explain the term " candle-power," which is used to measure the intensity of a light. By one unit of candle-power is meant the illumination from a standard candle, made of sperm, six of which weigh one pound, burning at the rate of 120 grains an hour. Other illumination is compared to this ; by a light of 20 candle-power is meant that in a definite time, and burning at a fixed rate, a light equal to that given by twenty standard candles burning together is obtained. In actual practice, a specially constructed lamp is used for measuring the candle-power ; this, as the light from one candle is too low a unit, has a candle-power of ten.

HEATING AND HOT WATER SUPPLY. A very great deal has been written on this subject, and many and various means of providing warmth and hot water are now to be obtained. There are several points that every housewife should bear in mind in making her choice.

The adequate and efficient heating of our houses is dependent on several factors—movement of heat, relative humidity, and ventilation.

The three ways in which heat can move from one part to another are (1) conduction, i.e. it travels along materials from one part to another, as instanced by the way a silver spoon gets hot all through very quickly if stood in a glass of hot water. All metals conduct heat very readily, so that it quickly spreads over the entire

bulk of any metal object in contact with it ; but very many things conduct heat very slowly or not at all, such as air, wood, bone, and all materials that hold air in their interstices. (2) The second method is by convection, i.e. heated particles themselves move from one position to another ; air or water heated at one spot becomes lighter than the cooler layers farther from the source of heat, and therefore rises, creating currents of rising warmer air or water, and cooler currents which flow in to take their place. (3) The third method is by radiation, i.e. heat waves are given out by a source of heat, and these travel like light, through the air, without warming it. The warmth is realized as warmth only when it strikes upon some object, in the same way as light is realized as light only because it is reflected from dust and water particles in the air and from everything upon which it strikes. Of these three methods, the warmth conveyed by radiation is the best, as the heat rays striking on walls, furniture, and floor warm these, which in turn radiate some of the heat. Heat due to convection is also common, but conduction can be ignored as a means of heating houses. Convection is to be avoided as a means of heating, because in this process the air itself is heated, while the walls, etc., remain cold.

Unless the relative humidity, that is the amount of water vapour in the air, is kept within certain limits, feelings of discomfort are experienced, owing to the drying of the air and the consequent loss of moisture from the skin and from the mucous membrane of the mouth and nose. Also, a pool of cold air on the floor causes cold feet, and the draughts caused are most unpleasant.. No method of heating that depends on hot air can be considered as hygienically good.

Another factor in good heating is ventilation ; there must be constant circulation of air, and a method of heating that allows this, while preventing a sense of chill from the cold outside air, is good.

A factor that should not be disregarded is the tendency for rooms to become too hot, especially those with central heating systems. This is not only vitiating, but renders the inmates more susceptible to cold on going out. A fairly uniform temperature, comfortably warm, is to be aimed at, with enough ventilation to ensure against stuffiness.

The means of heating adopted in houses are chiefly by coal and gas ; anthracite, oil, and electricity are also used to a considerable extent. Central heating is becoming more general in private houses, and to an increasing extent in blocks of flats.

Coal. The open coal fire is by far the most cheerful and companionable of all methods of heating, and will probably continue to be used, in spite of the perfectly well-known facts of its inefficiency and wastefulness. It has one advantage over gas or other heating, however, in that a burning fire keeps up a current of air towards the chimney, thus automatically ventilating the room.

Also, a coal fire heats chiefly by radiation, though most of the heat produced by the burning of the coal is lost up the chimney. It is therefore, healthy, as the air itself is not overheated.

According to recent research,[1] the average efficiency of a good grate is about 45 per cent. About 25 per cent is radiant heat, and chimney loss is about 55 per cent. A coal fire is therefore a most expensive form of heating, as well as a creator of much labour in laying, feeding, and cleaning-up. In a room of any size it is powerless to affect more than a limited area, and a second fire, or some form of supplementary heating, becomes almost imperative for comfort. (Fig. 7.)

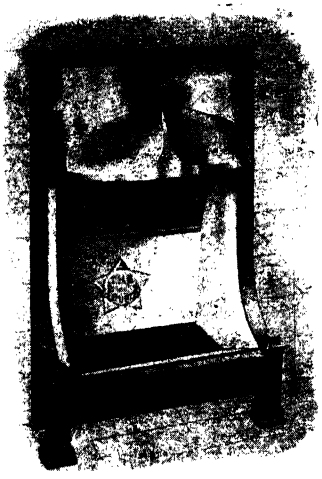

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FIG. 7.—GOOD TYPE OF MODERN GRATE.

Note sloping fireclay back, and absence of front bars. All the heat is thrown forward into the room.

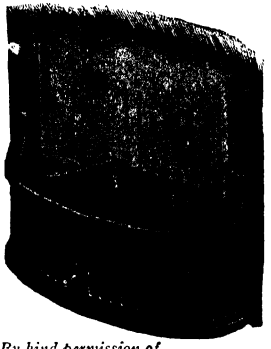
The figures quoted above are for a good type of modern grate, and in the old-fashioned grates the efficiency is even less. In these old grates with a high bottom and bars, practically all the heat went up the chimney, and though much fuel was burnt combustion was not complete.

In modern types, careful attention is paid to the angles of the back and sides, so that as much heat is sent into the room as possible. These are made of fireclay, which radiates heat powerfully. Also, the low bottom, with an adjustable air supply and no front bars, is an improvement, allowing slower and more complete combustion. There are many excellent types of grate on the market, almost any one of which may be installed with advantage. Where a modern type of grate cannot be afforded, there are excellent modifications for attaching to the existing bottom. These consist of an extension for the grate-bottom, held on by screws, and a front with a sliding door, which is held in place by a hook on to the false bottom. These are obtainable in all sizes, and convert the old inefficient grate into a modern one at a small cost. Though most of these fires require a considerable amount of fuel to start them going, once alight they burn well for a long time without being fed, and the fuel burns away as completely as possible, very often leaving only a few ashes. They are therefore economical of coal. (Figs. 8, *a* and *b*.)

[1] **A. H. Barker, "Coal Ranges."**

The great objection to the use of the coal fire is the amount of smoke and soot poured into the air in the burning. The most cursory examination of any reports on smoke abatement reveals the fact that most of the pollution of the air is due to domestic fires.

Unfortunately, there is no way at present of dealing with this source of air pollution, but it is greatly to be hoped that the more extended use of gas and electricity for heating and cooking will bring about some improvement. The health of town dwellers is injuriously affected by the impure air and lack of sunlight, due to smoke-laden air, and anything that reduces air-pollution would have a most beneficial effect on the public health.



By kind permission of Falkirk Iron Co., Ltd.

FIG. 8 (*a*).—AN OLD GRATE CONVERTED to a modern one by replacing the front by the barless one shown above, and adding an extension to the existing bottom.

Fire grates should be made of some material not requiring black-leading, such as stainless steel, which has a very beautiful appearance; or they may be enamelled. The hearth and surround should be of tiles, which save much labour in cleaning. The curb is pleasanter than a fender, and may be of wood, metal, or tile to match the surround and hearth.

To Lay and Light a Fire. Laying a coal fire properly is essential to obtaining a good fire as quickly as possible. A badly laid one either goes out almost immediately, or requires very careful attention for some time before it can safely be left; whereas a well-laid fire should burn up at once, and require no further attention other than the addition of a few more coals when well alight. This is obtained by building the fire in such a way as to allow entrance of plenty of air, and to get a good draught. (1) After the ashes have been cleared away, the grate cleaned and hearth tidied, some of the smaller cinders are placed at the bottom of the grate; these allow air to enter freely. (2) Crumple up firmly large single pieces of newspaper and place all over the bottom of grate. Over these place knots of newspaper made by tearing sheets into strips about a foot wide, roughly folding or crushing each into a string, then

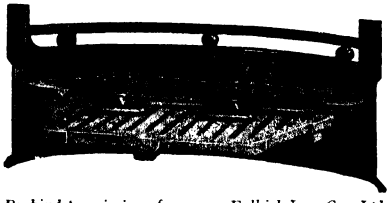


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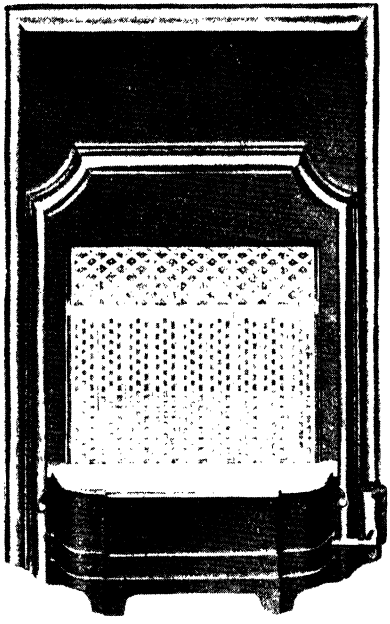
FIG. 8 (*b*).—VIEW OF ADJUSTABLE FIRE FROM BEHIND. Showing how loose bottom is bolted to existing grate.

twisting round hand, and knotting. Half a dozen of these placed on the paper give plenty of foundation, and burn longer than crumpled paper, till the wood has well caught. Most people are too sparing of paper ; plenty should be used, and arranged so that there is a great deal of air space. Glazed or brown paper should never be used, as it does not burn well. (3) Place pieces of wood crosswise over the paper, chiefly in the middle. Too much wood should not be used, but sufficient to burn till the coal is well alight is necessary. Any wood may be used, but it should be quite dry. In the country, twigs, etc., from the woods and trees are useful. Green wood, and the wood of elder trees, does not burn at all. Less wood can be used in laying if more of the paper balls are used, especially if odd bits of tallow and candle ends are placed here and there. (4) The large cinders and medium-sized pieces of coal should then be placed gently upon the wood, piece by piece, with tongs or fingers, building up into a pyramid so arranged that air can circulate freely. If it is not high enough there will not be sufficient draught. Small coal, or coal thrown on with a shovel, ruins the chances of a fire. The pieces should be carefully selected, and should be bright and shiny, as these catch alight quicker than the dull pieces. Large heavy pieces should not yet be put on. (5) A fire so laid should burn up at once after the application of a match at the sides and middle of the front. The paper should be lighted at the bottom. When the fire is burning well, and the coal is well going, a few larger pieces can be added ; if these are put on sooner, their weight causes the mass to fall down before it is properly alight, and will probably put the fire out. (6) Sweep out any debris, wipe over tiles with cloth or newspaper, and straighten fire-irons. (7) In replenishing a fire, coal should be put on before it has got too low, or the cold fuel may cool the hot cinders so much that the fire will go out. Several large pieces put on with tongs are better than if thrown on with the shovel ; but for banking up a fire, large pieces should be put on first, to allow air to circulate, and then followed by small coal and slack, put well to the back. If damped slightly, this lasts longer. (8) A banked-up fire should be gently stirred by pushing a poker in and lifting the whole mass, when it should blaze up at once.

Gas. Next to the open fire, gas heating is perhaps most common in private houses. There is no doubt that it is clean, convenient, and, with the modern improvements in construction, not injurious to health. The old type of gas fire had many disadvantages. The products of combustion of the gas, chiefly carbon dioxide, escaped into the air ; this became very dry, and it was necessary to have a bowl of water near the stove. The gas jets were sometimes badly arranged, so that unburnt gas, containing carbon monoxide, escaped, and very unpleasant smells were caused. Also, it burnt with an irritating noise, and did not give out heat over a very large area.

In modern fires, after much research, all these defects are avoided. The burners are generally arranged in a single row, and the flame is enclosed by an upright "radiant" of fireclay. This allows the gas jet to burn perfectly straight, thus ensuring that no unburnt gas escapes. In one of the oldest types of fire, the grate was filled with balls of fireclay. These distorted the inner cone of the gas flame, which consists of unburnt gas. If the flame plays on any solid object in such a way that this cone is distorted, these unburnt



By kind permission of *Stoves Ltd.*

FIG. 9 (*a*).—MODERN GAS FIRE.

gases can escape, and as carbon monoxide is present there is risk of danger from gas poisoning. None of the modern stoves, however, give rise to this condition, by reason of the vertical "radiants" protecting the flame. (Figs. 9*a* and 9*b*.)

Again, the shape of the front is such that as much as possible of the heat produced is thrown into the room. There is sufficient ventilation to carry off the products of combustion, and to keep up a circulation of air in the room. Great care is taken in fixing the position of the canopy, as if it is too far away from the top

of the fire there is insufficient draught; and if it is too near some of the heat is lost owing to the cooling effect of too much draught. The burner is carefully constructed to allow of regulation of the amount of air introduced, thus doing away with roaring, which is generally caused by too much air mixing with the gas. There is no reason why rooms should become any more stuffy with a good modern gas fire than with an open fire, provided ordinary ventilation is maintained. All gas fires should have a properly fixed ventilation

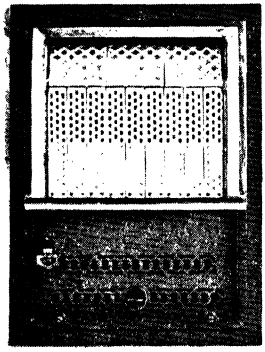


FIG. 9 (*b*).—PANEL GAS FIRE FIXED IN THE WALL, ABOVE FLOOR LEVEL.

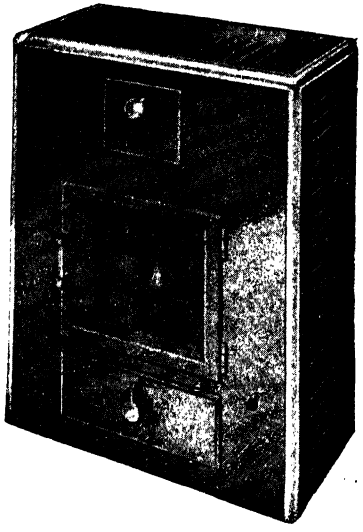
pipe up the chimney, if fixed in a fireplace; or be provided with a suitable outlet, if burnt in a room with no chimney. With well made gas fires, the radiant heat is increased to 50 per cent, while of the remaining 50 per cent, 15–25 per cent is convected, and 25–35 per cent lost.

Gas fires are extremely useful in dining-rooms used for meals only, and in bedrooms. For small households, where there are no maids, they are invaluable in saving labour and time, and possess the great advantage of being always ready when wanted.

Gas Radiators are frequently used. These are water-filled radiators heated by gas jets which warm the water, in turn warming the air immediately around the apparatus. Hence the heating effect is due almost entirely to convection, and if the apparatus is

allowed to get too hot, or burns a long time, the air becomes dry and stuffy. However, a very pleasant warmth can be spread through halls and passages, the warm air rising to the upper rooms. Gas radiators should not be used in bedrooms.

Anthracite Stoves are becoming more extensively used. Anthracite is a much harder form of coal, containing a high percentage of



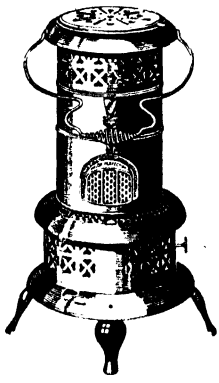
By kind permission of Jackson Electric Stove Co., Ltd.

FIG. 10.—AN ANTHRACITE RADIATOR.

carbon, and burns with very little smoke or ash, and with great heat. As it burns slowly, the stoves seldom require stoking. They give out a good heat, are very simple to clean out, and do not require much attention. Disadvantages are the initial cost of the stove, the price of the anthracite, and difficulty of obtaining it; but since the stove will burn, if required, for twenty-four hours, without using much anthracite, users generally find that in the end it is no more expensive than coal, while it maintains a steady comfortable heat. It is perfectly healthy in use, if proper draught is allowed; and as little smoke is produced, pollution of the air is negligible. A disadvantage from one point of view is the necessity of an enclosed fire, and the rather uninteresting appearance of the stove; this can be made more cheerful by the use of transparent doors through which the fire can be seen. These stoves are largely used in dining-rooms, halls, and bedrooms. (Fig. 10.)

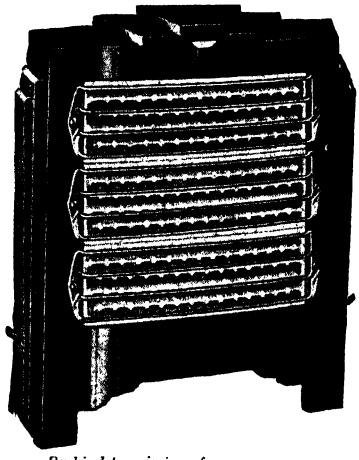
Oil. Oil is less used for heating purposes than coal or gas, but very useful and efficient portable stoves are obtainable; they give a good

heat, and are extremely useful for warming rooms or parts of a room where a coal fire is undesirable or impossible. (Fig. 11.) Heavier makes are on the market, which are less liable to be knocked over. In these forms the oil is burnt in a wick, but a heating apparatus can be obtained in which the flame from an oil stove burning paraffin vapour under pressure is made to heat a fireclay radiator. Also, there is a small hot water radiator heated by oil, useful for small rooms or bathrooms. The disadvantages are the liability to smell, and the constant attention required, but they are economical in upkeep.



By kind permission of Anglo-American Oil Co.

FIG. 11.—PORTABLE OIL WARMING STOVE.



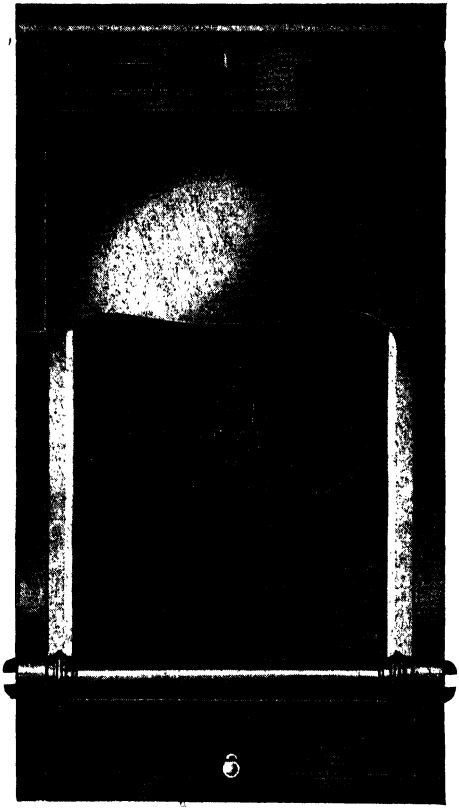
By kind permission of Jackson Electric Stove Co., Ltd.

FIG. 12.—AN ELECTRIC FIRE.

Electricity. This is now employed in various ways, and the cost reduced by a system of overall (all-in) rates. Fires may be fixed above floor level, like gas fires, or may be of the portable type, in various designs and finishes. All are designed to give out as much radiant heat as possible. As there are no products of combustion, the air is not used up; therefore electric fires are hygienic and clean. They are very convenient, but the amount of heat obtained is considerably less than that obtained from either gas or coal for the same cost. (Fig. 12.)

A method of electrical heating, which perhaps comes more suitably under the head of central heating, is by means of heating elements in the walls, behind panels; the advantage claimed for this system is that the walls are kept warm, thus ensuring an evenness of temperature and a comfortable warmth. The separate

panels are controlled by switches, allowing any desired degree of heat to be obtained. The difference between this and other electric heating appliances lies in the fact that the elements used are heated to a much lower temperature than a radiator, but over



By kind permission of *R. Russell & Sons, Ltd.*

FIG. 13 (*a*).—AN OPEN GRATE DESIGNED TO HEAT WATER FOR A RADIATOR.
The boiler s mmediately underneath the flue door. See Fig. 13 (*b*).

a much larger area, causing a gentle warmth throughout, instead of an intense local heat. It can, if desired, be supplemented by a coal fire. There is no possibility of damage to decorations or furniture, and the elements, being hidden, may be placed wherever suitable, in conformity with any particular style. As a means of warming, it is ideal, but it involves the usual drawback—expense.

Central Heating. American and Canadian houses are warmed by a central furnace, which heats a boiler distributing water or steam over the whole building. It is in common use in this country in large houses and big buildings, but is expensive to install in ordinary small dwellings. It is advantageous in that it produces an even temperature throughout the house, and avoids the extensive use of fires, thus increasing the cleanliness in some measure.

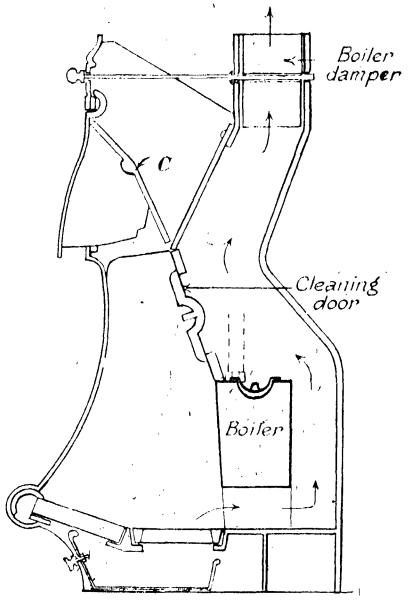


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FIG. 13 (*b*).—DIAGRAM OF A GRATE AND BOILER.

The principle upon which central heating depends is on heating the air by hot pipes and radiators, i.e. by convection ; thus there is a tendency to overdry the air, causing a close, stuffy atmosphere. Also, as the hot air rises, the cool air enters at ground level, and a feeling of chilliness may be felt round the feet. The radiators, unless placed under a window, cause dirty patches on the wall behind, due to the dirt and dust deposited from the moving air ; and there is an absence of cheeriness and comfort. In some private houses in which central heating is installed, a small open coal fire is often maintained for the sake of appearance. The furnace is often situated in the basement, with the boiler, and may be heated by coal, coke, or anthracite, and many furnaces will also burn

rubbish, which should not, however, be used as the chief or sole fuel.

In a centrally-heated house, there is a pleasant general warmth, which can be regulated as desired; and the radiators in the different rooms can be cut off from the general supply if necessary. Care should be taken not to allow the rooms to get too hot, as this makes the inmates more susceptible to outside cold.

A modified form of central heating, which is very useful where it can be adopted, is to connect radiators for one or two rooms to an independent hot water boiler. This economizes in fuel by supplying, in addition, water for heating purposes, which keeps a dining-room or hall warm enough without other means of heating. In a large living room where an open fire gives insufficient heat, a radiator in a different part of the room, heated from a boiler at the back of the fire, is very effectual. It may be disconnected as desired. (Figs. 13 (*a*) and 13 (*b*).)

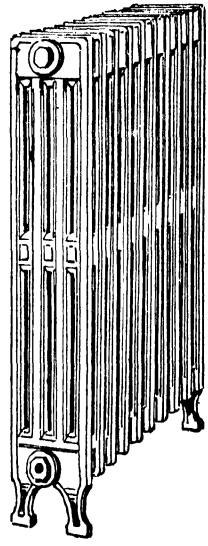


FIG. 14.—A MODERN RADIATOR.
Note narrowness of sections, which give a large radiating surface.

Certain forms of central heating depend on the circulation of hot air throughout the house, heated by boilers in the basement. As already pointed out, heating on this principle has little to recommend it, and should not be adopted. The ideal form of heating is one that will keep the air cool, while giving out plenty of radiant heat. The radiators used in any form of central heating are in the most modern types composed of small sections, in order to give as great a radiating surface as possible. (Fig. 14.)

Coke is used in specially constructed fireplaces as an open fire, with a fixed gas burner to start it. It is efficient and smokeless, and burns best with small coke. Logs, but nothing else, may be burnt on top.

CHAPTER III

HOT WATER SUPPLY AND COOKING STOVES

AN adequate hot water supply is essential to the labour-saving house, as by its means efficient and easy working is greatly facilitated, and comfort materially increased. It should be obtained as inexpensively as possible, and be available at any time in reasonable quantity, both for household requirements and for baths. There are few situations in a household that are more irritating than the failure of the hot water supply.

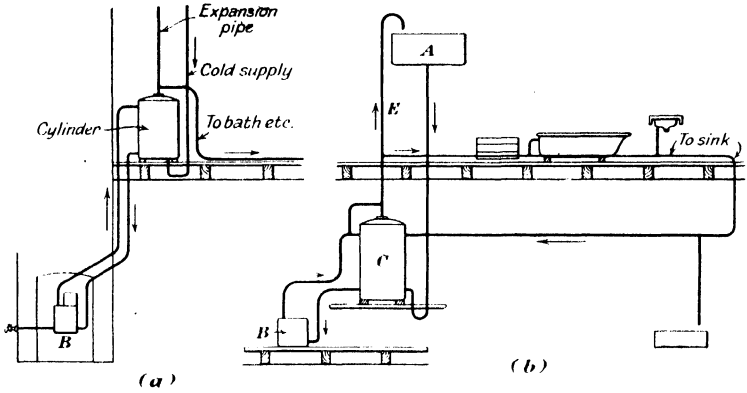


FIG. 15.—LOW PRESSURE SYSTEM.

(*a*) Cylinder on first floor. (*b*) Cylinder on same floor as boiler, but at a higher level.
A. Cold water tank. *B*. Boiler. *C*. Hot water cylinder.
E. Expansion pipe.

The circulation of hot water depends on the convection currents set up when water is heated. That nearest the source of heat rises, while colder water, being heavier than hot, flows in to take its place. Thus there is a constant flow, the hot water rising, the cooler water returning to the boiler. The usual method of securing this circulation is by a boiler in the kitchen range. Such boilers are generally self-filling, but, where no water supply is laid on, they may have to be filled by hand. Hot water may be supplied by low-pressure or high-pressure boilers.

LOW-PRESSURE SYSTEM. In this system there is an outlet to the air, and the only pressure on the water is that due to the weight of the water in the pipes, the actual amount of which depends on the height of the cold water tank above the boiler.

The water heated in the boiler rises by convection direct to the cylinder, where it collects at the top. An expansion pipe for the escape of steam is taken up to a position above the storage tank from the cylinder, and from it pipes are laid to the various taps, from which the water returns to the cylinder with a slight fall. Cold water to take the place of used hot water enters from below, so that the hot water is not cooled by the cold water.

The storage tank or cylinder is sometimes placed in the kitchen, on the ground floor. A. H. Barker recommends its being placed at the highest point in the system, so that all hot water will collect in it. This, while conserving the hot water, causes waste of cold water from the taps before the hot is obtained, while in the other two cases hot water is obtained more quickly. In any case, the storage cylinder should be insulated, that is, covered with some bad conductor of heat to prevent loss by radiation. Pipes can easily be insulated when laid, but owing to expense this is seldom done. The cylinder may have a properly fixed covering of felt and cork mixture, asbestos, or slag wool; or the housewife can herself make a jacket of some thick woollen or felt material to fit over it. The pipes, however, cannot be so dealt with once they are laid. Insulation conserves the heat of the water, allowing it to remain hot a long time, even after all source of heat has been withdrawn, and so saving fuel. Also, once the water has got hot, a small fire only is sufficient to keep up the supply for a moderate demand. Fig. 15 shows a common method of obtaining a hot water supply with a low-pressure boiler.

HIGH-PRESSURE SYSTEM. The difference between a high- and a low-pressure system is that, in the former, the water is heated under pressure, so that much higher temperatures are obtained. The circuit is closed, that is to say, it is not open to the atmosphere at any point, and the pressure upon the water is exerted by the water vapour driven off from the water itself owing to the high temperature. It is not often adopted in small private systems. The pipes required are smaller and stronger than for a low-pressure system, and the system is more often used for hot water central heating on a large scale. The boiler contains a coiled copper tube, which is connected with a similar coil in the storage cylinder. This tube is sealed, and has a sealed expansion tube to prevent bursting; therefore, the water inside it reaches an extremely high temperature. The storage cylinder contains cold water, which is heated by the coil of hot water immersed in it. Thus, the water used is indirectly heated, and does not pass through the boiler at all: it is distributed to fittings in the same manner as by the low-pressure system. (Fig. 16.)

The usual method of obtaining hot water by the low-pressure kitchen boiler is in many ways convenient, but it has several disadvantages. The chief of these is that the presence of the boiler

behind the range increases very greatly the amount of fuel consumed, without adding to the efficiency of the oven; and, again, to have hot water in summer means keeping up a kitchen fire, which is most trying in warm weather, and hot water in any quantity cannot be obtained at any time unless the range is alight.

Various attempts have therefore been made to obtain hot water at small cost by means of heating otherwise than by the kitchen stove.

INDEPENDENT BOILER. One of the most useful of these is the " independent " boiler. (Figs. 17, *a*, *b*, *c*.) These boilers are made in all sizes and burn coke, anthracite, or coal, though the

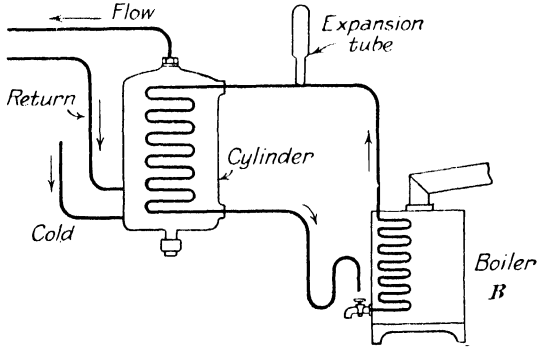


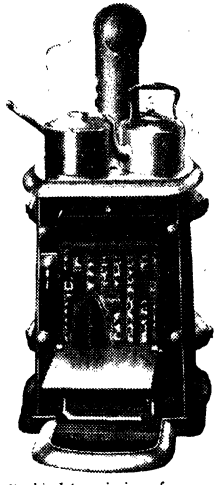
FIG. 16.—DIAGRAM ILLUSTRATING HIGH PRESSURE SYSTEM.

latter is not recommended by some makers, except for starting the fire, because it forms a tarry deposit which seriously interferes with the efficiency. They are useful, also, in consuming any household refuse, though it should be remembered that this cannot form the sole or chief fuel, as is occasionally tried. If desired, the boiler can be made to supply two or three radiators, and the boiler itself serves to keep saucepans hot; in fact, some boilers are designed to use some of the heat for cooking purposes, other than oven cooking. The efficiency of an independent boiler is much greater than that of the range, and when kept on all day, especially in summer, more water is heated than can conveniently be used. If the storage cylinder is insulated and of an adequate capacity, enough hot water can be produced by having the boiler on for a short time only. During winter, if the boiler is burning day and night, only about three charges of fuel per day are necessary, and it is very little trouble to clear out dead ashes once a day; once a week the fire can be allowed to go out, and the fire box cleared.

GAS is very frequently used for supplying hot water, and it is certainly the cleanest and most convenient method, but more

expensive than solid fuels for heating water on a large scale. It should not be used in a boiler not designed for it, as this leads to much waste of fuel. The geyser is useful and efficient for supplying bath water, and many good designs are on the market. Of these, the " closed " or " sealed " type is preferable, as the products of combustion do not come in contact with the water. To keep up a continuous supply, however, is expensive, as well as inconvenient.

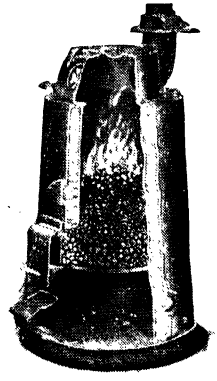
A very efficient means of obtaining hot water for the bath and the kitchen taps at the same time is by a gas-heated circulator.



By kind permission of Ideal Boilers and Radiators Ltd

FIG. 17 (*a*).—AN INDEPENDENT BOILER.

Top utilized for heating saucepans, and front for heating irons and keeping pans warm.



By kind permission of Ideal Boilers and Radiators, Ltd.

FIG. 17 (*b*).—SECTION OF AN INDEPENDENT BOILER.

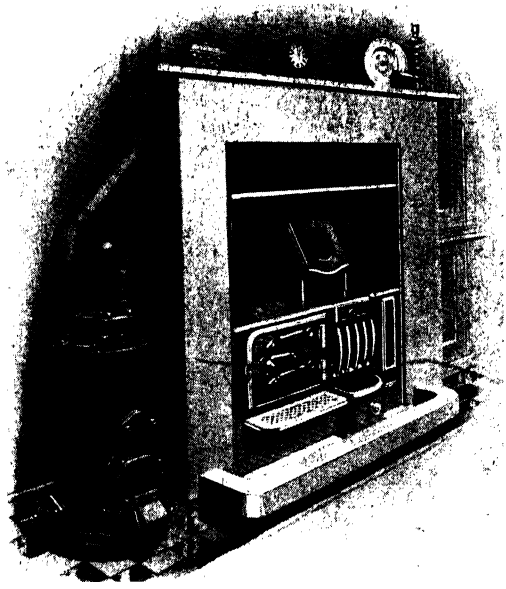
Showing water-jacket surrounding fire.

This is a boiler, heated by gas, and supplying constant hot water to all taps, including the copper. It is specially suitable for small flats where no maid is kept, or in houses where hot water is required only occasionally. Most of the designs are provided with a thermostatic arrangement, by which the gas supply is automatically lowered when the water reaches a certain temperature.

A useful installation is that whereby the water may be heated either by the range or by gas in an independent boiler connected with the back boiler. When the range is going, the water is heated in the ordinary way ; but if not, it may be heated by gas, by an arrangement of coils connected to the range boiler. When the range is in use, the water in the gas-heated portion is not affected.

Wash coppers, with supply pipe and tap, are also heated by gas, and are very efficient.

In country districts where there is no gas, geysers can be obtained which are heated by paraffin oil on the wickless system, or by an ordinary coal or wood fire. Where spirit is cheap, a kind that burns alcohol is obtainable.



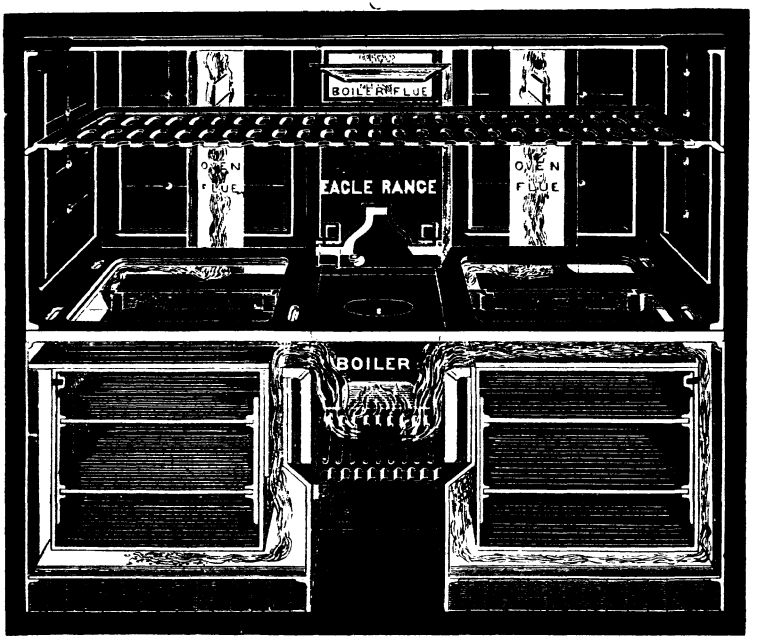
By kind permission of *Ideal Boilers and Radiators, Ltd.*

FIG. 17*c*.—AN INDEPENDENT BOILER CONNECTED WITH THE KITCHEN RANGE.
Each can be used independently.

Electricity for heating water is mostly restricted to kettles, though electric geysers are now on the market. These water heaters are provided with thermostatic control; but unless the electricity rate is very low they are expensive as compared with solid fuel or gas.

Combination stoves are of many different makes. Some are ordinary coal fires, with a boiler at the back; others are made for cooking and hot-water heating.

The open fire with boiler behind, usually fixed in sitting-rooms, is very useful in winter, when the one fire can be used for two purposes, the cooking being done by gas; but its value is doubtful in summer,

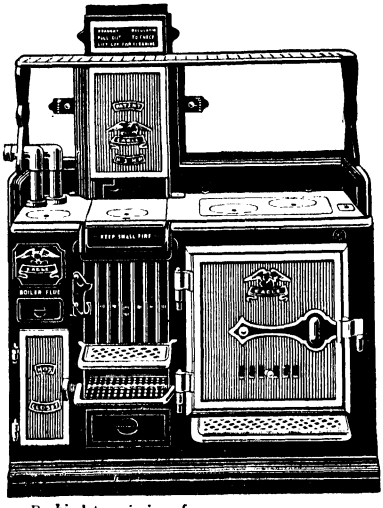


By kind permission of *The Eagle Range and Grate Co., Ltd.*

FIG. 18*a*.—DIAGRAM OF AN ORDINARY COAL RANGE, SHOWING DIRECTION OF FLUES.

as no one would want to light a sitting-room fire to get hot water. Recourse must then be had to a supplementary means of heating it, which makes the installation of the sitting-room boiler grate altogether superfluous.

COOKING STOVES. The cooking stove is the most important piece of equipment in the house, and one that makes an enormous difference to the comfort of the housewife and the family. The ordinary range is expected to heat water and cook food, both on the hot-plate and in the ovens, and to warm the kitchen, and consequently requires a great deal of fuel. As the construction is rarely on heat-saving lines to any great extent, a range wastes fuel in order to make good the loss of heat to the surrounding masonry and to the air; and the fuel itself, not being fully consumed (i.e. entirely reduced to carbon dioxide and ash), is not fully utilized. The presence of the boiler is also productive of greater fuel consumption than is actually required for cooking purposes. The ranges in general use are of two types —closed-fire and open-fire. The materials used are sheet or cast iron, the latter being more durable, usually requiring black-leading, but sometimes treated in a special way which gives an unrustable finish; some are nickel finished. Most stoves are fixed in brickwork, but more modern ones stand out from the wall. (Fig. 18*b*.)



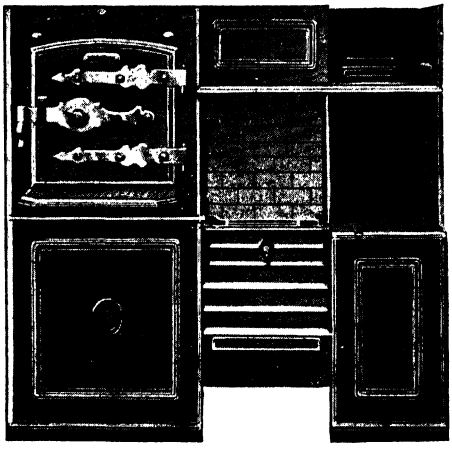
By kind permission of Eagle Range & Grate Co., Ltd.

FIG. 18*b*.—A PORTABLE RANGE.

Closed Ranges. In these ranges the fire is enclosed, and is visible only from the front. The ovens are heated by hot gases from the fire passing along flues or passages, and regulated by dampers. The gases may pass either (*a*) over the top of the oven, down the farther side, and along the bottom, finally escaping by the chimney, when the oven is said to be heated by "top heat"; or (*b*) down the inner side first, under the bottom and up the farther sides, to which the term "bottom heat" is applied. (Fig. 18*a*.) Both kinds of heat are required in different working processes, and some grates are so made that the direction of the draught can be altered to either type. In large ranges, there are two ovens, one with top heat, usually called a "roasting" oven, and the other with bottom heat, for baking. Closed grates are provided with a

fixed or a rising bottom, the latter allowing a smaller or a larger fire to be used as required. Both fixed and portable types are in use the former are more solidly built, and take longer to heat than the thinner, lighter portable range, and a good deal of heat escapes into the masonry ; but, once heated, they keep hot longer than the portable range, and are less affected by draughts. The portable range, however, requires no fitting into masonry, and burns less fuel ; it heats more quickly but loses heat more quickly. It is very useful for small households.

Open Ranges have an unenclosed fire, and the oven may be on a level with, or above, the fire, e.g. the Yorkshire range. Such



By kind permission of *The Carron Co., Ltd.*

FIG. 19*a*.—A TYPICAL YORKSHIRE RANGE, WITH OPEN FIRE AND RAISED OVEN.

ranges require rather more fuel, as the air supply is unlimited; consequently the fuel is burnt rapidly and incompletely. Both open and closed ranges may have a boiler, at the side or back of the fire. (Fig. 19*a*.)

Insulation. To obtain the full value of the fuel burnt, loss of heat should be guarded against by proper insulation, and this is now done in the most modern stoves, which burn coal, coke and anthracite, or even wood, and are kept in continuously. Little heat is wasted in warming the room and water may or may not be heated, according to the type.

Fuel. Coal as a fuel is dirty and extravagant, but, as things are at present, it is the cheapest that can be bought. Ranges burning coke or anthracite are far neater, as very little smoke is given out, and consequently the labour of cleaning is reduced. There are a few excellent ranges on the market burning these fuels,

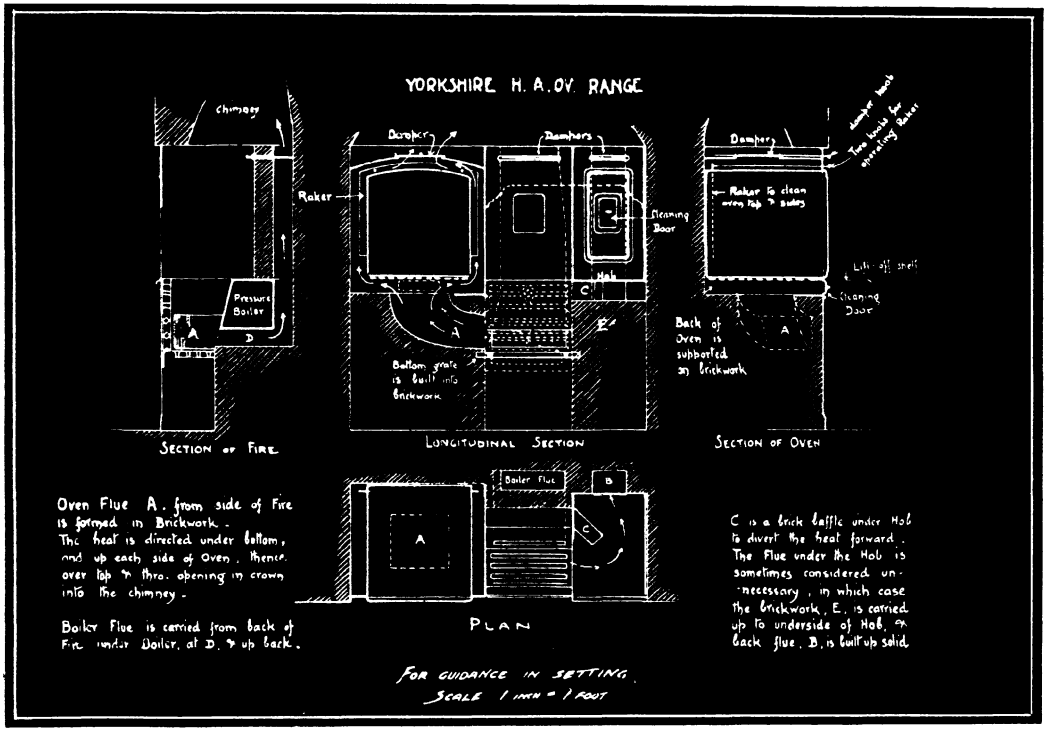


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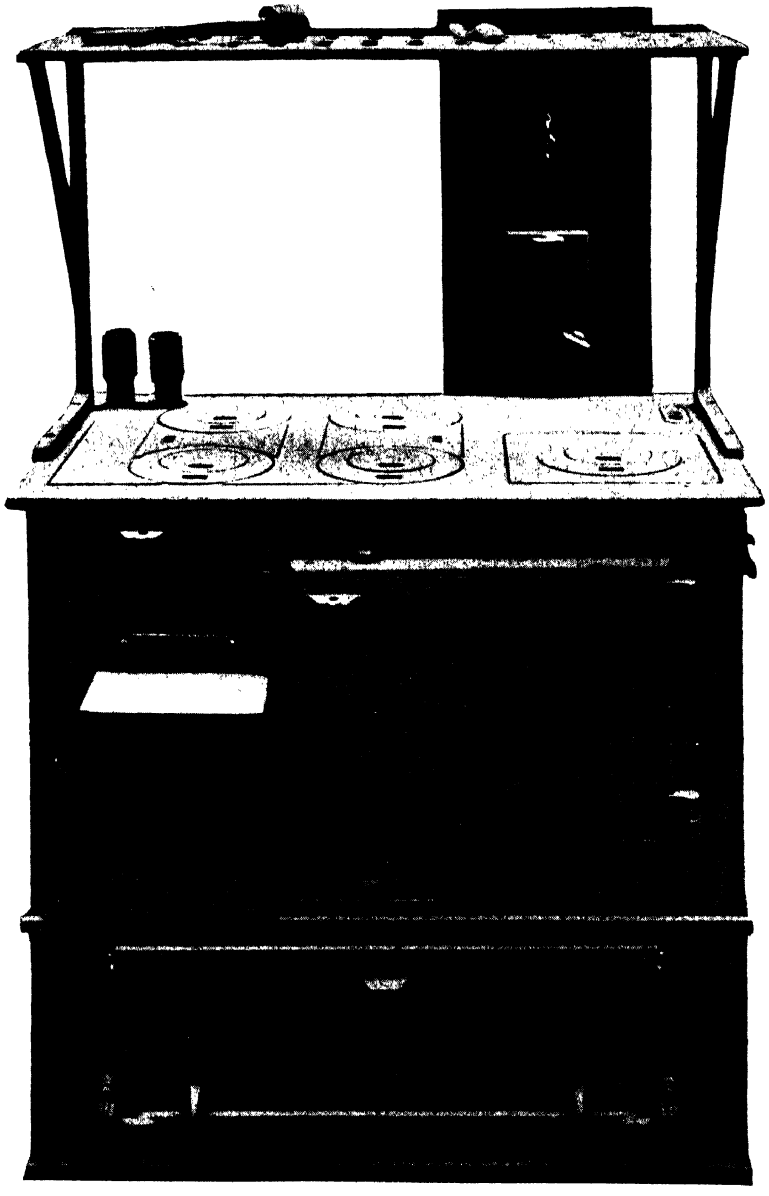
FIG. 19*b*.—DIAGRAM OF YORKSHIRE RANGE, SHOWING DIRECTION OF FLUES.

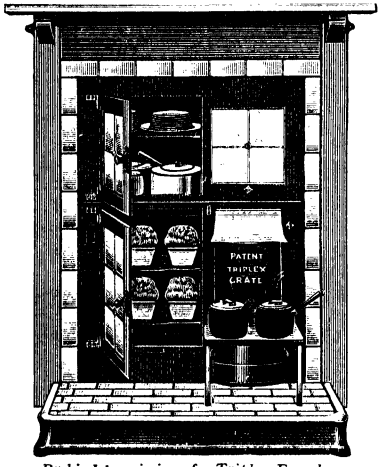


By kind permission of *London Warming Co., Ltd.*

FIG. 20.—AN ANTHRACITE COOKING RANGE, WHICH IS ALSO CAPABLE OF SUPPLYING ONE OR TWO RADIATORS.

and it is greatly to be hoped that they will gradually replace coal ranges altogether. (Fig. 20.) These ranges will keep in day and night, ensuring plenty of hot water, and are not extravagant in fuel.

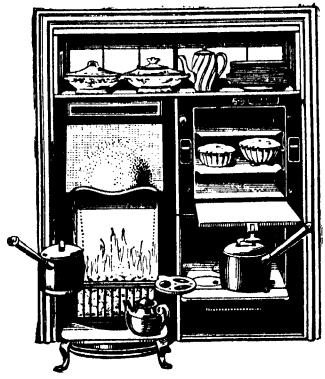
Combination and Convertible Ranges. These are ranges designed to meet the requirements of a small house or flat, where the kitchen is used occasionally as a sitting-room. They are made to work like an ordinary range when required for cooking, but may be altered into a pleasant open fire. Most of these stoves burn coal,



By kind permission of Triplex Foundry.

FIG. 21*a*.—A USEFUL CONVERTIBLE RANGE FOR A PARLOUR-KITCHEN.

Diagram of construction on p. 176.



By kind permission of Eagle Range & Grate Co., Ltd.

FIG. 21*b*.—ANOTHER TYPE OF CONVERTIBLE RANGE.

The bottom part, generally used as a hot plate, may also be utilized as an extra oven.

but some burn coke, while others are adapted for gas or coal. (Figs. 21, *a*, *b*, and *c*.)

Choice. It is impossible to give the merits of every available stove, but to those selecting a range the following list of points to be taken into consideration may prove helpful. Since circumstances and individual preferences vary greatly, a make appealing to one may be entirely unsuited to another.

The range should be adequate in *size*; if it is too small, enough cooking will not be done at one time to justify the expenditure.

Flues should be easily accessible, and easy to clean thoroughly.

There should be as little necessary blackleading as possible.

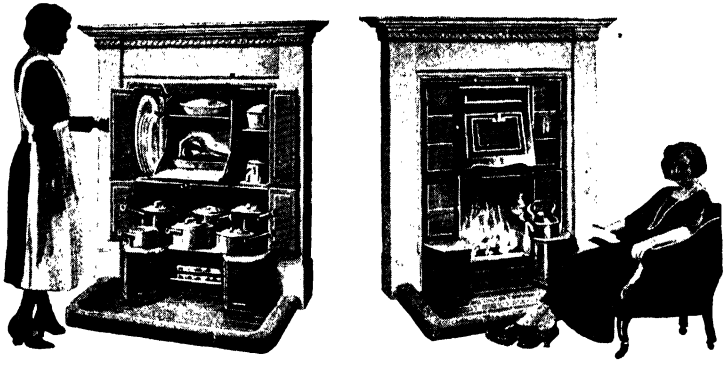
An insulated oven or an inner glass door, to prevent loss of heat, is an advantage.

An independent boiler is in many cases preferable to a contained boiler.

A closed and adjustable firebox is more economical in fuel than an open one.

Coal is dirtier to burn than coke or anthracite.

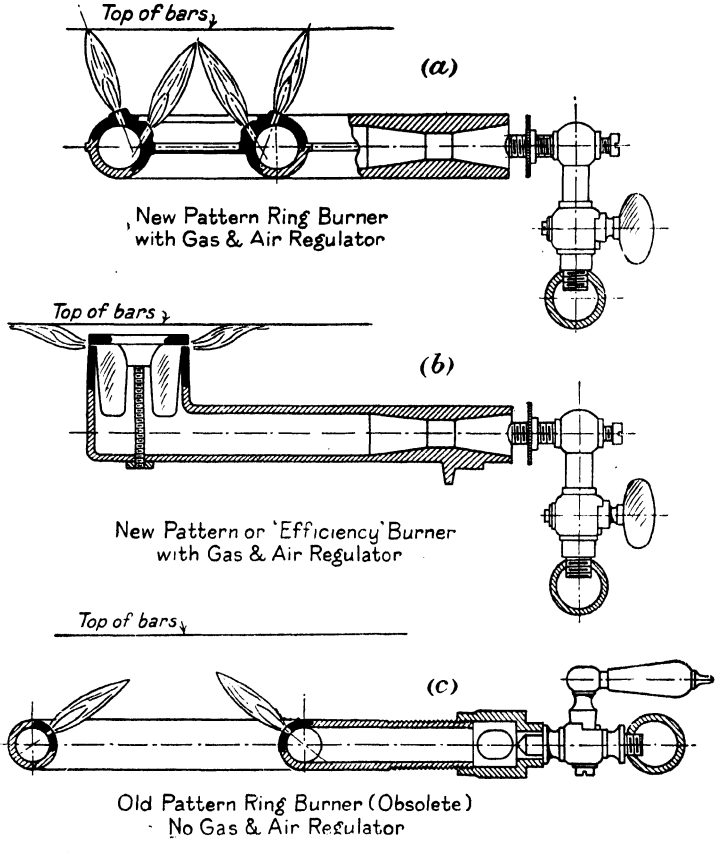
GAS STOVES. Cooking by gas is much more convenient and cleaner than by coal, but owing to the price of gas, it is rather more expensive in actual use. It is, however, much less wasteful than coal, as it is used only when required, and is more efficient in that less heat is wasted. The ovens are insulated, but a good deal of heat is allowed to escape from the hot plate.



By kind permission of *Interoven Stove Co., Ltd.*

FIG. 21*c*.—ANOTHER TYPE OF CONVERTIBLE RANGE.
Shown in use, and closed when not in use.

The Hot Plate. New and improved designs, however, attempt to reduce this loss, special attention being paid to the shape of the burner. The efficiency of a burner is dependent on (*a*) the combustion of the gas; (*b*) the strength of the flame; (*c*) the angle at which it leaves the burner; and (*d*) its distance from the vessel to be heated. (Figs. 22, *a*, *b*, and *c*.) An old type consisted of an iron ring, with holes, and with no control of the air supply (*c*). Proper combustion requires a correct amount of air, which produces a hot, strong, non-luminous blue flame, with a medium-sized inner blue one. In a good type of modern burner (*see* Fig. 22*b*) the admission of air is under the control of the user, so that the right quantity can be introduced for the complete combustion of any gas. The angle at which the flame leaves the burner is also accurately adjusted, and the height from burner to hot plate is such that the top of the flame (the hottest part) impinges on the bottom of the pan. A long wavering flame is much less efficient, and is very wasteful of gas, and shows that too little air is mixing with it. Too much air causes roaring, so that the housewife can readily



By kind permission of *W. Sugg & Co.*

FIG. 22.

adjust her flame, after a little experience, to the correct strength. The same applies to the oven burners, though these are different in that they are not heating vessels immediately above them. A different type is one in which the flame leaves the burner at the sides, forming a flat ring (*b*). This uses rather less gas than the ordinary burner, but whether it is an improvement is a matter of opinion. As the flame is flat, the burner is nearer the hot plate, but in other respects the points enumerated above apply equally well. The griller uses much gas, and waste heat can be utilized by a kettle or saucepan when grilling is being done.

By kind permission of *Stimex Gas Stove, Ltd.*

FIG. 23.—A GAS STOVE

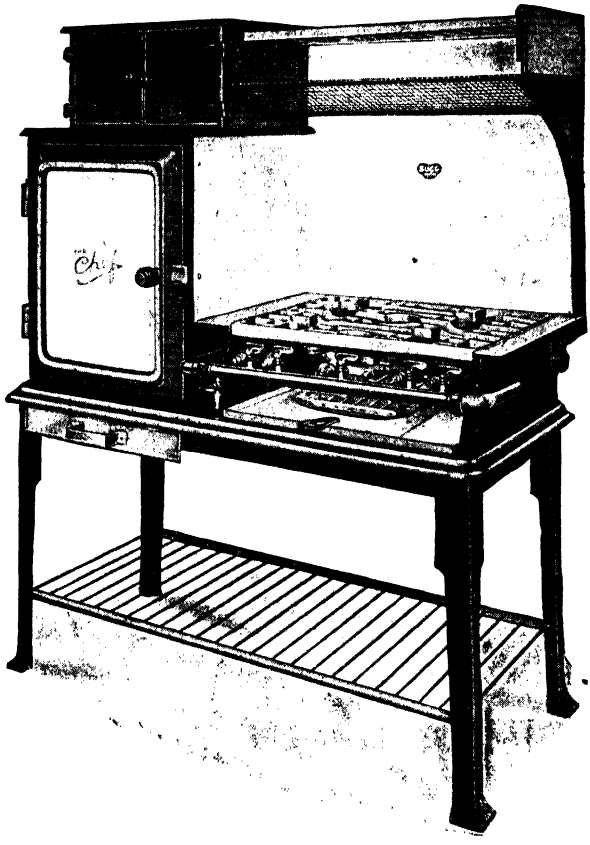
In which the oven burners are in separate compartments, so that no fumes come in contact with the food.

The ovens are generally enamelled inside, and can be heated (*a*) internally, i.e. the burners are in the oven itself, or (*b*) externally, i.e. the burners are in separate compartments outside the oven, so that products of combustion do not come in contact with the food. The latter type uses slightly more gas, but the food cooked therein is considered superior to that from an internally-heated oven. Stoves with automatic heat-control of the oven are easy and economical to use.

A disadvantage of most stoves is that they necessitate stooping to the oven. This has been eliminated by bringing the hot plate and oven on a level, an arrangement so simple that it seems strange that it is not more general. (Fig. 24.) Hot water heating is not

generally provided for, so that an independent form of some sort is necessary if there is no range. Boiling large quantities on the stove is wasteful and expensive.

Plate-racks are useful for warming dishes and plates during cooking.



By kind permission of *W. Sugg & Co.*

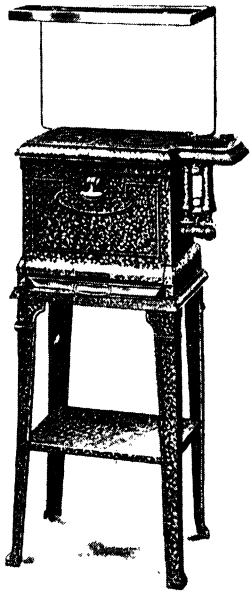
FIG. 24.—A GAS RANGE

In which the arrangement of the oven and hot plate facilitates work and eliminates stooping.

Materials of which the stove is made should be easily cleaned. Many are enamelled outside and nickel-finished, some are aluminium-painted, and some are covered in white imitation tiles, and look very bright and clean. All parts should be movable for thorough cleaning, and the bars of the hot plate fit loosely to allow for expansion when heated. Some stoves have a canopy for carrying

off the steam, but this, though an advantage in a large range, is not essential.

Small gas stoves are on the market in many designs, all scientifically constructed to utilize every particle of heat from one burner. For small families or flats, some of these makes are admirable; the cost of running is less than for a gas stove, and the capacity smaller. On this, however, it is impossible to heat water in considerable quantity. (Fig. 25*a*.)



By kind permission of Parkinson Stove Co., Ltd.

FIG. 25*a*.—A SMALL GRILLER OVEN SUITABLE FOR ONE PERSON, PLACED ON A USEFUL STAND.

Choice. When selecting gas stoves, attention should be paid to the following points—

Ease of cleaning, i.e. labour-saving materials and construction.

Ease of using.

Air and gas regulators, and protected taps to prevent accidental turning on and off.

Good burners; and no iron work immediately over them, as this wastes heat.

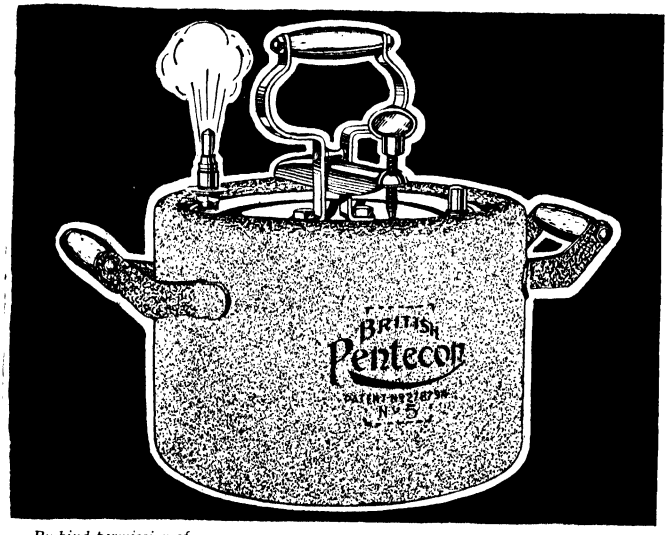
With or without oven heat-control.

Suitability of size for family.

Plate rack an advantage.

A great convenience, though not an absolute necessity, is the ventilated canopy or hood to take off steam and vapours arising from the cooking. This prevents smells from penetrating to other parts of the house, and keeps the kitchen pleasanter. Such hoods can also be fixed to coal ranges.

ELECTRICITY. Electric cookers are becoming more generally used with cheaper current. They take longer to heat than gas, but use can be made of residual heat after switching off. They are clean, quick, very efficient, and convenient. Some stoves are made so that, if little cooking is required, the top part of the oven may be



By kind permission of *Pentecon Ltd.*

FIG. 25*b*. A PRESSURE COOKER.

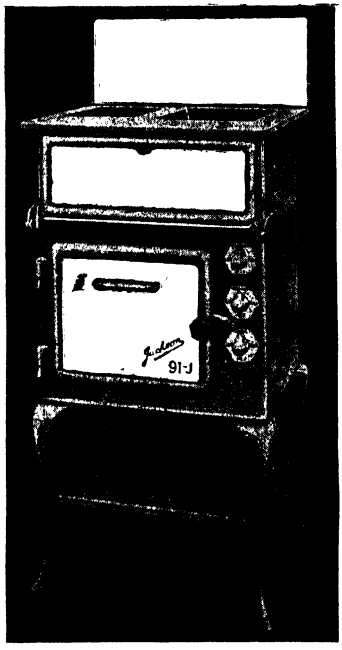
heated without heating the lower part. This is an advantage unobtainable with a coal oven. (Fig. 26.)

OIL. Where gas cannot be obtained, there are excellent stoves for burning oil. These are made in various sizes, and are heated either with separate lamps, or by single lamps supplied from a single reservoir. They are easy to manage, well made, very efficient, and the oil consumption is reasonable. (Fig. 27*a*.)

Stoves heated by the Primus type of lamp are also made. A lamp burning vaporized paraffin is obtainable, which can be used for heating up the kitchen range, the firebox being filled with fireclay, and one or two slight alterations made. A good oven heat is obtained, and there is no soot to clear away. (Fig. 27, *b* and *c*.)

The disadvantage of oil stoves is the cleaning required, since, if they are neglected, they smoke and give off an objectionable smell. When carefully looked after, however, they prove very reliable. The lamps of the Primus type, though easier to clean, nevertheless must be regularly attended to, otherwise they tend to flare up and give other trouble. The flame can be regulated, but for very slow cooking a simmering mat is required.

OTHER COOKING APPLIANCES. Fuelless cookers are of various types, of which the hay box is perhaps the best known. So much has been said and written about this, that most people must be aware of the principle upon which it works. It depends on the fact that materials which entangle air in their meshes allow very little heat to escape, and are bad conductors of heat; a box lined with such material, therefore, will retain the heat of anything put into it. If food at boiling point is immediately placed in the box, it will remain practically at that temperature for a long time.



By kind permission of Jackson Electric Stove Co., Ltd.

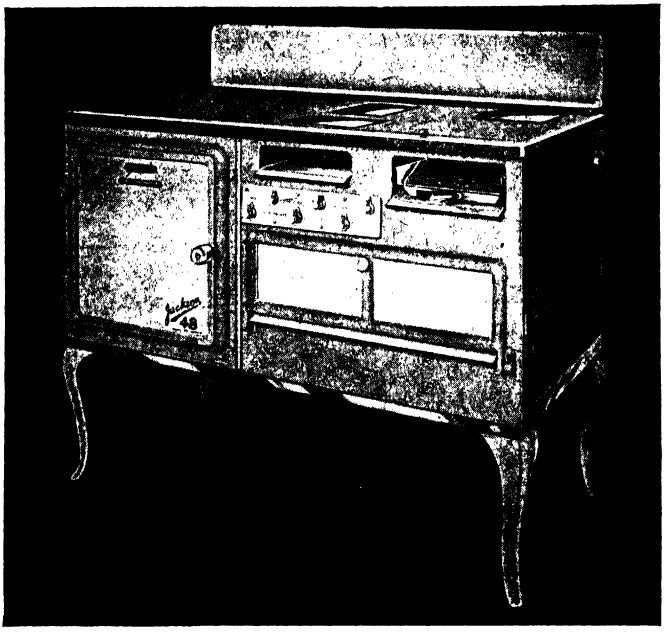
FIG. 26*a*.—AN ELECTRIC COOKING STOVE.

Hay boxes may be purchased ready made, but many people make their own. For this, a large sugar box is needed, which should be clean and dry. This may be lined with brown paper or newspaper, then packed very tightly with hay. It is essential that this be very well rammed down. When a good foundation has been made, place a vessel or vessels (preferably without long handles) in the positions they will occupy, and continue packing in hay tightly all round them till it is level with the tops. Make a thick pad of hay, enclosed in a piece of flannel or an old pillow case, which will fill up the remaining space. It is possible to use newspaper, but this requires much more thorough packing, and is less efficient. Asbestos is excellent, if it can be obtained.

To Use the Box. Bring the saucepan containing the food to the boil, and cook for a few minutes, the length of time depending on

the kind of food. While still boiling, and without removing lid, place as quickly as possible into the space in the hay, cover at once with hay and finally the pad, and shut the box. It will continue to cook, and to keep hot with no risk of spoiling.

This method is very useful for cooking porridge, stews, and anything requiring slow cooking. A hay box is most useful when



By kind permission of *Jackson Electric Stove Co., Ltd.*

FIG. 26*b*.—AN ELECTRIC COOKER CONVENIENTLY ARRANGED.

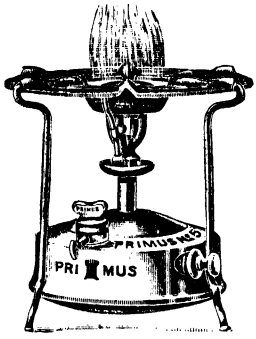
gas is used for cooking, as it will continue to cook things otherwise requiring a small gas to keep them going. A disadvantage of hay-box cookery is that the accessory food factors in foods are injuriously affected by long slow cooking.

Another fuelless cooker works on the principle of steam under pressure, which cooks food in much less than the usual time. The cooker is obtainable in various sizes, and expense can be saved by the economy of fuel, as it is only necessary to heat the vessel to the appropriate point on any source of heat, after which it is removed and no further attention or use of fuel is required. Such cookers admirably supplement a limited cooking equipment, as besides being

much quicker, different foods can be cooked at once, none absorbing the flavour of another. The apparatus is strongly made and simple to use, and is useful where time is a consideration. (Figs. 25*b* and 28*a*.)

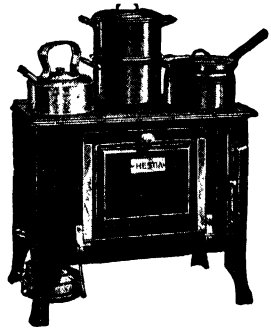
METERS. Meters are used to record the amount of gas or electric light used over a given period.

Gas is measured in cubic feet, by means of a "wet" or "dry" meter. In a "dry" meter, there is a kind of bellows, which, as



By kind permission of Condrup, Ltd.

FIG. 27*a*.—A HANDY OIL STOVE,
burning paraffin under pressure.



By kind permission of Condrup, Ltd.

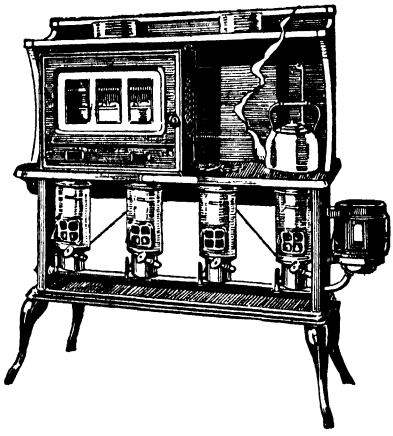
FIG. 27*b*.—PRIMUS STOVE HEATING AN OVEN.

the gas moves through it, causes wheels to revolve. These, in their turn, are fixed to pointers which indicate the amount of gas passed. The usual appearance of these dials is shown on p. 54. In a "wet" meter, small gas holders become filled and as they rise they convey the gas to another part of the meter, thus moving the points on the dial. (Fig. 29*a*.)

The dials may register 1,000,000 cub. ft. to 1,000 cub. ft., or if three dials only are present, 100,000 to 1,000 cub. ft. The top dial is used only for test purposes, and is ignored in reading. It should be noticed that alternate dials move anti-clockwise. Before the meter is used, all the pointers stand at 0 (zero). Each complete revolution of a right-hand dial makes its neighbour on the left move through one division, i.e. if the pointer in the 1,000 dial moves completely round, the point on 10,000 moves to 1. When this has moved completely round, indicating the passage of 10,000 cub. ft. the pointer on the third dial from the left stands at 1. When this has made a complete revolution, 100,000 is registered on the left-hand end dial, 1,000,000 being recorded when this has reached 0 again.

The number of cubic feet is registered to the nearest 100; therefore, after the reading taken from the figures, 00 is added. The smaller of the two figures between which a pointer is standing is read. If one appears to be on a whole number, look at the next dial on the right, which should be at 0 if the full amount has passed; otherwise it will register between 9 and 0, when the lower numbers must be taken as the correct reading.

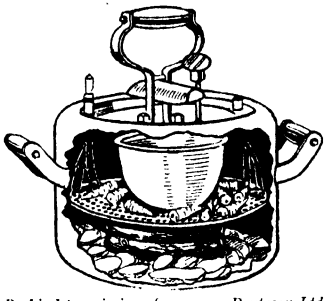
Up to the present, gas has always been sold by volume, that is, at so much per 1,000 cub. ft., irrespective of quality. Of late, however, a system of charging by its heating value, i.e. its thermal capacity or calorific power, has been adopted. The calorific power of gas varies with the kind of coal used for distillation, and with other factors. By it is meant the number of British Thermal Units (B.Th.U.) contained in 1 cub. ft. of gas. One B.Th.U. equals the amount of heat required to raise 1 lb. water 1° F. This is too small a unit to charge, therefore the *therm*, which equals 100,000 B.Th.U., is taken instead. Every company announces what the calorific power of its gas is. This announcement may be in terms of calories or B.Th.U. per cub. ft. One calorie equals the heat required to raise 142 cub. ft. water 1° C., and also equals 3·968 B.Th.U.; e.g. if the declared calorific power of a gas is 120 calories, this is converted to B.Th.U. by multiplying 120 by 3·968 equals 476·16 B.Th.U.



By kind permission of The Anglo-American Oil Co.

FIG. 27*c*.—A SATISFACTORY TYPE OF OIL COOKING STOVE.

The oil is in the glass container at side, which may be replenished without interfering with the lamps.



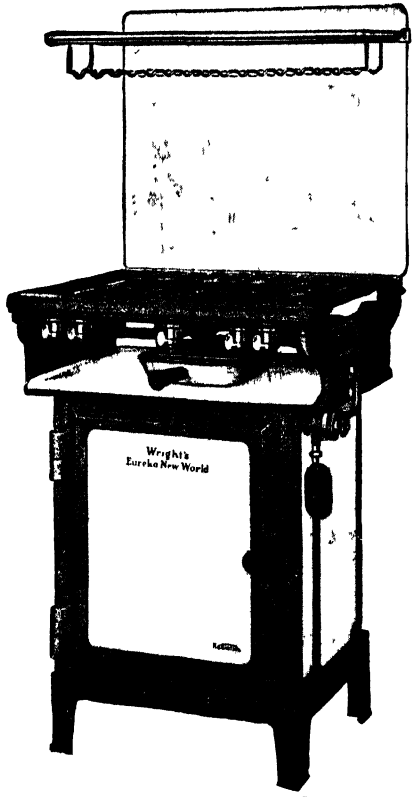
By kind permission of Pentecon Ltd.

FIG. 28*a*.—SECTION OF FUELLESS COOKER.

The amount in therms which is chargeable over a given period is found by the following formula—

$$\text{Therms used} = \frac{\left\{\begin{matrix}\text{Current consumption}\\ \text{over given period in c.ft.}\end{matrix}\right. \times \left\{\begin{matrix}\text{declared calorific}\\ \text{power of gas.}\end{matrix}\right.}{100{,}000}$$

The current consumption is obtained by subtracting the last meter reading from the present one. Suppose, as in our example, 27,000 cub. ft. is the present reading, and 24,200 cub. ft. was the



By kind permission of *Radiation, Ltd.*

FIG. 28*b*.—OVEN WITH AUTOMATIC HEAT-CONTROL, SHOWING DIAL OF THERMOSTAT

reading when last taken, the current consumption = 2,800 cub. ft. The declared calorific value of the gas is 550 B.Th.U. per cub. ft.

Substituting, we get

$$\frac{2{,}800 \times 550}{100{,}000} = 15{\cdot}4 \text{ therms.}$$

ELECTRICITY is charged by units, the Board of Trade Unit (B.T.U.) has already been explained. It should not be confused

with the B.Th.U. (British Thermal Unit). The meter appears as below; there are five dials, and it is read in the same manner as the gas meter, except that as it registers units, 00 is not added

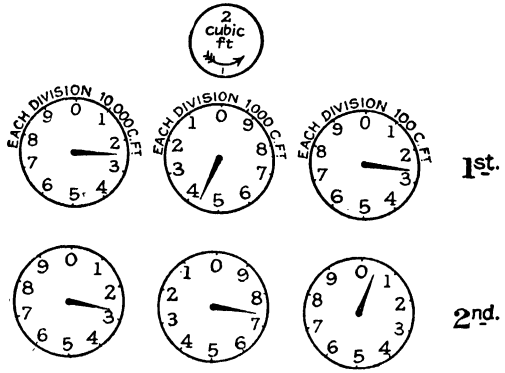


FIG. 29*a*.—HOW TO READ THE GAS METER.

to the reading; the amount used is found by deducting the previous reading from the present one. The difference between the first and second readings of the dials in Fig. 29*b* is 146·8 units.

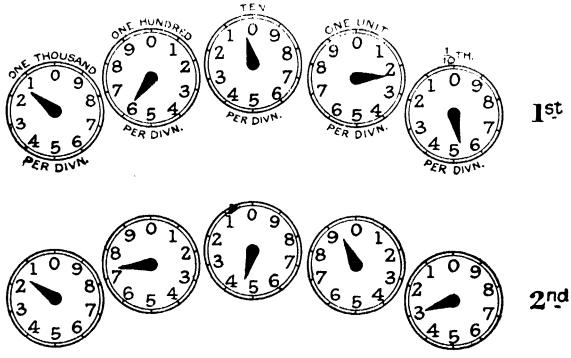


FIG. 29*b*.—ELECTRIC METER.

SELECTION AND COMPARISON OF FUELS. In towns, the choice lies between gas, electricity, and coal, oil being often resorted to in the country. The housewife would do well to take into consideration when deciding upon her stove—

The time required by each for cleaning, starting, and replenishing, and the labour involved.

The amount of fuel consumed by each in cooking an average amount of food.

The cost of upkeep, including fuel, time, and labour, compared with the work done.

The final choice, of course, depends on the local cost of fuel, and on whether the housewife considers her time and labour or the money cost more important.

Coal is generally cheaper in fuel cost, but expensive in labour and time. It necessitates very thorough and constant cleaning to produce good results, and constant attention during use. Also, wind and weather influence a coal range to a great extent.

Gas is usually more expensive, but requires no special attention during use, is easier to clean, and is independent of weather conditions. A hot water supply system can be attached to a gas service.

Oil is satisfactory and requires little attention during use, but is troublesome and dirty ; unless clean it is smelly and smoky. It compares favourably with gas as regards expense.

Electricity solves the problem of labour and time in upkeep, and where current is cheap the cost is reasonable, though the initial outlay may be high for those of moderate means.

Many people find it very satisfactory to remove the kitchen range, and replace it with a good cooker and an independent boiler, or to fix a small portable range, with or without a separate hot water supply. (Fig. 64.)

ASH, CINDERS, COKE, AND WOOD. Ash. If coal burns completely, the fine powder or dust remaining is the ash, or mineral matter of the coal, which will not burn. The percentage of mineral matter varies in different coals, but averages about 4–9 per cent in soft or bituminous coal, and rather less in anthracite. The constituents of the ash are principally compounds of silica, alumina, and iron. A coal with a large percentage of ash gives off less heat than one with a low percentage, and it frequently happens that in some coals the ash fuses to form accretions of *clinker*, which considerably reduces the heating value, and fills up the grate with masses of incombustible material.

Cinders are formed when most of the gaseous compounds of the coal have been burnt, and what remains is largely carbon mixed with the mineral matter. Though these will burn if put on an already hot fire, they do not give out heat sufficient for cooking purposes, though they are very useful for keeping a fire in.

Coke is formed during the destructive distillation (i.e. heating in closed retorts) of coal in the manufacture of coal gas. All the volatile matter has been driven out, forming coal gas, ammoniacal liquor, and coal tar, and the solid residue is coke. This is used largely as a fuel for boilers and for certain types of cooking ranges. It is much lighter than coal, and has less heating value ; it requires

starting with a hot fire, and to keep it burning a good body of fuel and a properly arranged draught are necessary. It burns, however, with no smoke, hence it is cleaner than coal. When used for boilers, it should be remembered that owing to its bulk in comparison with that of anthracite, about twice as much in volume must be put on each time in order to obtain the same fuel value. As regards the comparative cost of anthracite and coke, the first cost of anthracite is greater, but more coke will be burnt to supply the same amount of heat, so that in the end there is very little difference in the expense.

Wood. This gives a fine white ash, and no clinker of any sort. As a fuel for heating and cooking, it is practicable only if available in very large quantities, as it burns away very rapidly, without forming a sufficiently steady body of hot fuel. It is pleasant when burnt in a room grate, but a better heat is obtained if a small proportion of coal is used as well. It is a very clean fuel, both in handling and as regards clearing up grates.

AUTOMATIC HEAT CONTROL. Ovens fitted with an automatic heat-control have a thermostatic arrangement by which an even temperature at any desired point is maintained during cooking. The dial shown in the top right-hand corner of the oven (see Fig. 28*b*) is set at the mark indicated by the makers for any foodstuff requiring to be cooked, the gas is lighted, and when the oven has reached the desired temperature the gas is automatically reduced to a point at which it will keep the temperature steady without further attention from the cook. When it is necessary to alter the oven to a higher or lower temperature the dial is moved accordingly. The cooking in these ovens is even and thorough, and, provided care is taken to follow the makers' directions, results are good. Fig. 28*b* shows one such stove, and the setting dial at the side. These stoves are economical in gas and very silent during use.

Thermostatic control is also fitted to electric cookers and serves the same purpose of maintaining an even temperature during cooking.

CHAPTER IV

FLOORS AND FLOOR COVERINGS

FLOORS. The treatment of the floors in a house is a problem that calls for much careful thought, as the outlay is bound to be considerable.

Four essential points should be remembered. The finished floor should be hygienic, i.e. as impervious as possible to dirt, and easy to clean ; suitable to purpose of room ; warm to the feet ; considered as the background for the rest of the decoration.

In the interests of hygiene, it has been increasingly fashionable to have uncovered floors. These may be of wood, stone, marble, or tiles. It is usual to have wooden floors which are left bare, stained and polished, and partially covered, if desired, with rugs. These may be of parquet, wood blocks, or the usual boarded type.

Parquet. Parquet flooring is very attractive and sanitary, but expensive to lay down. A surround of parquet, with the central part filled in with 3-in. boarding, is quite good and less expensive. It is possible to obtain an imitation parquet flooring, in sheets, to be fixed down to the ordinary floor. Parquet may be left unstained, and polished with beeswax and turpentine only, or it may be both stained and polished.

Stained and Polished Floors. Staining and polishing is a most useful and economical method of dealing with those not to be covered entirely. In a small study, sitting-room or bedroom, on the landings, and for a surround in other rooms, it is very suitable. When the whole floor is treated, rugs or mats add a cosy appearance, and deaden sound ; and they are easily removed for cleaning. Such floors are pleasant, hygienic, and labour-saving, and are especially adapted to rooms where the most spacious effect is required. Permanganate of potash, logwood chips, indoor solignum and water stains are frequently used for home staining.

The great disadvantage of stained floors is the shabby effect due to the constant wear in particular places, such as just inside the door, or down the middle of a passage—if no varnish has been used this can easily be recoloured and polished. It is well to place a small mat where the most tread will come, and to have a strip of carpet or linoleum down a passage. Rugs on the floor, of course, help to reduce the wear on the polish in the rooms.

Tiles, Stone, and Cement Floors. Plain floors capable of little alteration are the tiled hall, passage, and kitchen ; and stone and

cement floors. Plain tiles are best left as they are, or covered with a rug or two. In the kitchen they are clean and cheerful, and need no covering except a rug for the worker to stand on : this takes off the chilly appearance, and is better for health.

Stone or cement floors have little to recommend them : they are cold, damp, and gloomy, and should most certainly be covered. Unless the floor is very uneven, linoleum, which must be fixed down with a special adhesive, is very suitable provided there is no damp ; or it may be covered with coconut matting. In the case of very old and uneven stone, it is by far the best plan to have a new wooden floor laid above it. Any attempt at putting down a covering directly on to the stone will be unsatisfactory, owing to the uneven wear.

Mosaic and Marble Floors. Mosaic and marble floors are clean, and, if in bright colours, cheerful to look at—but they are cold to the feet. Rugs give an appearance of comfort, and deaden sound.

FLOOR COVERINGS. The floor coverings in general use are carpets, linoleum, and similar preparations, mattings of various kinds, rugs, and skins.

Carpets. Carpets are perhaps the oldest and most widely employed of floor coverings. They originated in the East, where they have been used for centuries and still play an important part in religious observances. They were first introduced into England from Spain by Eleanor of Castile in the thirteenth century, but were very rare, the usual floor covering, if any, being handfuls of clean rushes or straw, sometimes mixed with sweet herbs, spread over the floor. Queen Elizabeth possessed a Turkey carpet ; and, although not general, the use of carpets was becoming more popular in her reign. They are said to have been first manufactured in this country in the time of Henry VIII.

Carpets are made either by working wool into a canvas or other backing, having a pile on the right side ; or by weaving wool, hair, or mixtures of wool and cotton in squares or lengths, in which there is no backing and no pile.

Pile Carpets. Pile carpets may have the pile cut or in loops. Cut pile carpets include Turkey, Persian, and other Eastern carpets ; and the English Axminster and Wilton makes.

Turkey carpets are made by hand, by working thick tufts of dyed soft wool into a string and wool background. They are in bright colourings and beautiful designs, and are often of great age. They are usually made in rugs or squares of various sizes. Though expensive, they are extremely durable and very beautiful.

Persian carpets are native hand-made, similar to Turkey ; the wool used is shorter and finer, sometimes mixed with silk, and the backing is of soft thick string. The colours are wonderfully rich and soft in tone, and the designs exquisite. Genuine old Persian rugs are extremely valuable, especially the old Prayer-rugs, which

may be recognized by the design pointing to one end only. The number of knots to the square inch is a guide to the age of the rug ; the more knots the greater age, and therefore the greater value. The finest specimens are those made in the sixteenth century. Copies of ancient prayer-rugs and of old Persian rugs are of modern Anatolian origin and have only an ordinary market value.

The dyes used in both Turkey and Persian carpets are obtained from native plants, and the colours cannot be reproduced in other countries. The aniline dyes used in modern work cannot approach them in brilliancy and depth.

Most other Eastern countries produce rugs and carpets of various kinds. In colour and design they are generally inferior to the best Turkey and Persian carpets ; some of the cheaper varieties are of jute, which does not wear well nor keep its colour.

English Manufactured Carpets, Axminster and Wilton, are manufactured in England. They have a canvas backing, and are machine made. The wool is worked into the background over wires ; the loops are then cut before the wires are removed, leaving a short or long pile according to the size of the loops.

Wilton carpet has a rich, close, velvety pile, in good colourings and artistic designs. It is obtainable in squares or by the yard, and is very hard-wearing. It is suitable for dining-rooms, sitting-rooms, stairways, and halls.

Axminster has a rather longer, and less close, pile than Wilton ; the wool used is coarser, and fewer strands are used. It is rather less expensive and less artistic in colour and design than Wilton, but wears well and is useful in sitting-rooms, etc. It is obtainable in lengths and squares.

Loop Pile Carpets. In these carpets, the wires over which the strands are passed in weaving are withdrawn, the loops being left uncut. Brussels and Tapestry carpets are of this type.

Brussels. The pattern shows through on the canvas backing, but, as five-ply wool is used, the canvas is well covered, and should not show between the stitches. The colourings are quiet and the patterns small ; five colours are usually employed, and all should show when one row is frayed out. It is an excellent carpeting for hard wear.

Tapestry carpets resemble Brussels, but the pattern is stamped on the right side after weaving, and therefore does not appear on the reverse side. Only three-ply wool is used, so that the carpet is less durable than Brussels. It is useful in bedrooms and other places where there is not much hard wear.

Woven Carpets. These have no backing and no pile ; they are reversible, and less expensive than pile carpets. Being light and porous, they readily allow dust to go through, and also tend to wrinkle and stretch. They are less durable, and inclined to fade, but are useful in bedrooms and sitting-rooms ; their light weight

renders removal easy. To this class belong Kidderminster and art squares.

Kidderminster are washable and reversible, and in good quality the colours are lasting.

Art squares are not generally washable, and are cheaper than Kidderminster.

Hair Carpets are made in the Brussels style, and are of cow hair, goat hair, or horse hair. They are cheap and hard-wearing, and are produced in plain colours. They are useful for sitting-rooms, passages, and bedrooms. Those made from cow hair and goat hair are considered unsuitable for stairs; but horse hair, being very strong and springy, will wear excellently.

Mohair is the hair of the Angora goat, and is made up into hearthrugs. It is soft and silky in appearance, and wears well.

Felt is frequently used as a floor covering, either for the entire floor, or as a surround when a carpet square is used. It is made by subjecting layers of coarse teased wool to considerable pressure together with warmth and moisture, by which means the projecting scales on the wool lock into one another, producing a dense, close mass. For use instead of a carpet, or as a surround, a thick, heavy quality should be chosen, or it will not wear well, as it is inclined to stretch. It is obtainable in good plain colours, and is excellent in effect. Dark colours, however, tend to show footmarks and dirt too easily, especially if used in place of a carpet. Cheaper, thinner felts are sold for use as underlays for carpets.

CHOICE OF CARPETS. Carpets will probably always hold the first place as a covering for floors. They are warm, comfortable, and durable; they deaden sound; and their beauty of colours, texture, and design makes them adaptable to any scheme of decoration, and enhances the appearance of any room. They are, certainly, expensive; but the other objection frequently brought forward, that they hold dirt, and are therefore unhygienic, has less weight in these days of powerful and thoroughly efficient vacuum cleaners than formerly.

Since carpets are intended to last as long as possible, they should be of the best quality obtainable for the money to be expended; and suitable in pattern, colouring, and make for the purpose required. The size of the room should govern the type of pattern—a large room will bear a carpet with a large pattern, but in small rooms a close unobtrusive pattern, or a perfectly plain carpet, should be chosen.

Colour is important—a dark gloomy room is brightened by a light-coloured carpet; and a small room, not necessarily dark, appears larger than it actually is. It must not be forgotten, in choosing colours, that the carpet is part of the background for the rest of the room, and that backgrounds should be less intense in colour than objects that are to appear against them in any

decorative capacity. The relatively wide expanse of floor should harmonize with, but not dominate the rest of the room. Coloured rugs, hangings, or cushions appear to greater advantage against soft or neutral backgrounds. The colour of the carpet has also to be considered in relation to the position and purpose of the room. A lighter carpet would be more suitable for a drawing-room than for a dining-room or library, for instance, where a more subdued tint might be chosen. On the other hand, a light carpet in a room used as a lounge or living room would be ill-adapted to withstand the wear and tear, and to retain its freshness for long. Plain colours tend to show dirt and spots more readily than patterned ones, and they sometimes tend to fade sooner if exposed to the sun. Blue is usually considered to fade more quickly than other colours, but under present conditions no definite statements can be made about the fastness or otherwise of dyes used in manufacture. Certain shades of buff seem to withstand dirt and dust, and to retain their colour, and they make a pleasant background for dark furniture and light hangings.

Fitted Carpets and Carpet Squares. The custom of fitting the carpet close up to the walls all round is pleasant, but has disadvantages. It means careful measurement, and cutting to the exact size and shape of the floor, with consequent unavoidable waste of material. The appearance is comfortable and dignified, but thorough cleaning is difficult; and if a removal is necessary, the old carpet, though not worn out, would more often than not be quite useless in another room. Occasionally, however, a fitted carpet is an advantage, especially in small rooms or in flats where space is restricted. Squares and polished surrounds make the rooms appear smaller than they are, whereas a fitted carpet, carefully chosen to harmonize with the colour of the walls, produces an effect of spaciousness and dignity, without heaviness, that would otherwise be impossible, particularly where rooms lead out of one another or are visible at the same time, as in small flats. The question of cleanliness is solved by the vacuum cleaner. (Fig. 30.)

Generally speaking, however, fitted carpets are undesirable, and popular favour has turned to the bordered carpet square or oblong, surrounded by felt, stained floor, or linoleum. This has several advantages over the fitted carpet. It is easier to keep clean—no dust can accumulate round the walls and skirtings, and the effect is pleasant and comfortable. Moreover, removal to a new house does not necessarily mean buying a new carpet. Another great advantage is the possibility of altering its position in order to equalize the wear. It is advisable to turn the carpet round each time it is relaid after spring cleaning.

To Calculate Amount of Carpeting Required for a Carpet Square. The method of doing this is shown in the following example, in which it is desired to find the amount of carpeting required for a

FIG. 30.—A SITTING-ROOM, SHOWING A FITTED CARPET.

room measuring 21 × 18 ft., allowing a surround of $2\frac{1}{4}$ ft. Carpeting and carpet borders are always 27 in. wide—

Size of room	= 21 × 18 ft.
Width of surround	= $2\frac{1}{4}$ ft.
∴ Length of carpet will be	21 − $4\frac{1}{2}$ ft.
and Breadth ,, ,,	18 − $4\frac{1}{2}$ ft.
i.e. Size of carpet	= $16\frac{1}{2}$ × $13\frac{1}{2}$ ft.

The number of strips required is found by dividing the width of the carpet by the width of a strip—

i.e. strip required	= $\frac{13\frac{1}{2}}{2\frac{1}{4}} = 6$
∴ 6 strips, each $16\frac{1}{2}$ ft long, are required	= 6 × $16\frac{1}{2}$ ÷ 3 yds
	= 33 yds.

This amount does not allow for mitring the corners of the border, which will take up an extra length equal to four times the width of the border, i.e. 3 yds.

∴ total required = 36 yds.

N.B.—In certain patterns an extra yard or two will be required to allow for matching.

LAYING CARPETS. A few remarks on the subject of carpet-laying may not be out of place, inasmuch as the life of a carpet, however good, is dependent to a considerable extent on the care with which it is put down. The floor should be thoroughly clean and dry, and any projecting nails hammered in. The boards should be smooth and even ; if they are not, it is as well to go over the edges with a plane, or the carpet will wear out where the ridges come. An underlay should always be used, as this softens the tread, deadens sound, and prevents friction on the carpet from the floor. Also, a considerable amount of dust, brought up from beneath the floor boards, is prevented from passing into the carpet ; the underlay therefore helps to keep the back clean, and also adds to the warmth by preventing the passage of draught.

Underlays may be of felt, old carpet, or special mothproof felt paper. Old newspapers or brown paper are also excellent. Whatever is used should be quite clean and free from dust. Felt or carpet must be laid perfectly flat and free from wrinkles, and, if necessary, tacked in position. Clean paper should be laid, quite smooth and with no hard ridges, in overlapping sheets till a sufficient thickness is obtained.

The carpet is then laid in the centre of the room in such a position that, when unrolled, very little shifting is necessary. It should have been folded sides to middle across the seams. Folding down the seam stretches the stitches and makes them liable to give and cause the seams to open. If not new, the original position can be marked in some way, and the carpet turned round before unrolling. Two people are necessary to unfold the sides evenly, so as to disturb the underlay as little as possible ; greater care is

required in the case of paper underlays. Then by careful pulling the edges are made straight and square, and creases flattened out by working from the middle outwards on the hands and knees, pushing the carpet with the hands. A final sweep with a carpet sweeper greatly helps to flatten it, as well as to remove pieces of fluff.

Stair Carpets should be laid over a good thick underlay, either old carpet or felt; paper, unless it is in long narrow lengths, is unsuitable here, as it will work out The edges of the tread especially should be well padded to prevent unnecessarily rapid wear. In order to allow for shifting the position of stair carpet, half a yard or so more than the actual length required should be purchased. The position can then be altered slightly every year, or oftener if there is much traffic up and down.

Carpet Squares, if heavy, do not require to be fixed down. It is better if they are not, as the edges can then be lifted a little in order to dust underneath. A brass carpet tack at the corners may be necessary to prevent curling. When necessary to remove tacks, prise up carpet and all under the tack. This needs careful doing, but is better than trying to force the chisel under the head of the nail. Never tear up a nailed-down carpet with the hands; it is sure to break where the nail is, and leave a ragged hole. This applies even more forcefully to felt, which must be tacked in position owing to its tendency to wrinkle and stretch. Felt must be as well padded as carpet, or even more so, to avoid stretching and tearing; it should be turned under at the edges, before being fixed down with large-headed nails.

LINOLEUMS. Next in popularity to carpets, come linoleum and similar floorings. A good deal of advance has been made in recent years in the manufacture of this material, and there are now many varieties on the market suitable for almost every purpose for which carpet is used. It possesses an advantage over carpet in that it is more readily cleaned; but, owing to the smooth surface, many people consider it less warm and comfortable than carpet, even when rugs are used.

Kinds of Linoleum. Linoleum itself has a background of canvas, which is covered with linseed oil containing a certain proportion of powdered cork and resin. The top surface is then finished and polished. It is considerably thicker than oilcloth, and must be laid on a perfectly even surface, or it will crack. It is supplied in several varieties.

Plain Linoleum is obtained in various colours, and has no pattern. It tends to show every footmark, but is very useful as a surround, or in a small room with rugs.

Inlaid Linoleum has the pattern running through to the canvas back. It is excellent for hard wear, as the pattern cannot disappear. It is obtainable in good colours and designs.

Printed Linoleums have the pattern painted on the surface after making, and consequently it wears off in a comparatively short time, and presents a shabby appearance long before the linoleum itself is worn out. Its use is not recommended where there is likely to be much traffic.

Cork Linoleum. This and the many varieties of cork carpet now on the market have a larger proportion of cork than ordinary linoleum. This makes them warmer and softer to the touch, and more suitable for bathrooms, nurseries, and bedrooms. Soft warm colours are now obtainable, and the hard brightness objected to in linoleum is absent. Where carpets are considered too costly, or too difficult to keep clean, linoleum or cork carpet may be used with excellent effect in conjunction with a few good rugs. They are very easily swept and polished, and, if necessary, washed; though the less often this latter is done the better. In the case of cork carpets, which naturally have a dull surface, no attempt should be made to polish them like linoleum. The makers usually supply special preparations which should be used for them.

Oilcloth. There is a tendency to confuse oilcloth and linoleum, and to use the terms interchangeably. They are, however, quite distinct. Oilcloth is simply canvas, well oiled, and covered with pigmented linseed oil, which is then painted. It is not durable, and cracks easily, but is cheap, and useful on back stairs or passages; in artisan houses it is used frequently for bedroom floors. Being thin, it may also be used for covering tables and shelves.

LAYING AND FIXING LINOLEUM. Linoleum is usually put down over existing wood floors, but it is becoming fashionable to lay it as a permanent flooring when the house is built, and in this case the floors are sometimes made of cement, and the usual wood flooring omitted. It is then used as an ordinary floor, and large rugs used as if on wooden boards. It has the merit of being smooth and hygienic, and when properly laid will last for years. The actual laying should be done by experts, and is similar to the process described on the next page.

On Wood Floors. The floor upon which it is intended to put down linoleum must be even and well-ventilated and prepared as described for carpets. Ventilation is important, as, if there is any dampness, dry rot may set in. The lengths of linoleum should be cut so that they run, if possible, across the floor boards and not with them, and should be a trifle shorter than the actual measurement to allow for settling and expansion. The edges, however, should be firmly closed at the seams, and the pattern matched. No fastenings should be put in until the linoleum has settled down, which may be in from one to three weeks. It should be fitted neatly round corners and projections, and all joints should be tight—attention to these details helps to give a well finished appearance. It is a good plan to put bricks or sandbags end to

end along all the seams during the settling period, to flatten them before fixing. The $\frac{3}{4}$ in. wire brads used for fixing should be placed at short intervals, and well hammered in.

On Cement or Stone Floors. When it is desired to lay linoleum on cement or on concrete floors, it is more satisfactory to call in the help of a furnishing firm, as it has to be fastened down with special fixative and waterproof cement, and rolled flat. Some firms suggest cementing a layer of felt paper on to the floor first, and then fixing the linoleum on to this. The paper adds to warmth, and deadens sound, as well as giving a smooth even finish. It can also be put in when linoleum is being laid on ordinary wood floors, and has an added advantage in that it prevents the inevitable expansion and contraction of the wood, caused by variations in moisture, from affecting the linoleum, which might otherwise crack and buckle.

TO CALCULATE AMOUNT OF LINOLEUM REQUIRED. Multiply the number of feet in the length and the width of the room together, and divide by nine to bring it to square yards. This gives area of linoleum required. As it is usually sold in widths of two yards, divide the area by two to find length of linoleum required.

Example—

Length of room = 12 ft.
Breadth ,, = 10 ft.
Width of linoleum = 2 yds.

$$L \times B = \frac{12 \times 10}{9} \text{ sq. yds.} = \text{(approx.) } 13 \text{ sq. yds.}$$

Therefore, amount of linoleum required
$= 13 \div 2 = 6\frac{1}{2}$ yds. (approx.).
i.e. 7 yds. of 2-yd. wide linoleum must be bought.

RUBBER. Rubber, as a flooring, is being used to a greater extent than heretofore. There are several preparations now on the market, in various designs, but it is at present laid down only in large buildings and offices, and is somewhat expensive. There is every indication that it will come more and more into use, and will probably be within the reach of any who care to put it down. It has the merit of being quiet and resilient, and easy to clean, and its wearing powers seem considerable.

MATTINGS. These are of various kinds—rush, grass, or fibre, and other materials.

Eastern. The rush or grass mattings are chiefly of Eastern origin, either Japanese or Chinese. The Chinese mattings are of prairie grass, and are sold in carpet sizes. Japanese mattings are smaller and thinner, and less durable ; they are made of straw, or grass. These mattings are very suitable for bungalows, seaside cottages, verandahs, or for use on lavatory or water closet floors. They are light and inexpensive, and though they readily let the

dust through, they are very easily removed for cleaning. They are usually printed in some pattern after weaving, or they may be self coloured, with a contrasting border. All should be held down with drawing pins, as they wrinkle up very easily.

Rush mattings are generally much thicker and are made from twisted or plaited rush, sometimes dyed before use; they are clean and bright looking, but somewhat uncomfortable in use, owing to their thickness; and, being light, they slide about unless they cover the whole room.

Mattings used in bedrooms wear out quickly if the beds have to move over them, and are then unsightly. They should be used as a centre covering only, leaving the floor under the bed free, as far as possible.

Coconut Matting. This is made from the fibres of the outer husk of the coconut, and is strong, durable, and inexpensive, and well fitted for hard wear. At one time it was procurable only in a rather ugly brown colour, but it is now made in a greater variety of plain colours, and check patterns. It is especially useful on stone floors and passages, as it is warm and comfortable to the feet. Dust, however, goes through with great ease, but the matting is readily removed for cleaning. A plain matting shows marks more than a check one, but it is possible to wash it quite successfully if care is taken not to let it get too wet, and to see that it dries quickly. It is obtainable in all widths up to 6 ft., and may be joined and bound to form a very serviceable carpet.

Doormats are also of coconut fibre, made with a strong back and a deep "pile." They are essential for wiping boots on, and one should be provided at every external door. One on the doorstep itself as well will prevent much dirt coming into the house. They are obtainable in all sizes, but it is sometimes necessary to have them made to fit special doors.

String Matting. This is similar in appearance to coconut matting, but made of closely-twisted string. It is produced in various plain colours, and is very suitable for passages. It is slightly more expensive than coconut matting, and does not wear quite as well.

THE USE OF RUGS AND MATS. A judicious use of rugs in decoration does much towards producing a satisfying colour scheme. Good old Persian rugs, or any bright rugs, show up to advantage on a neutral background, whether of dark polished wood, or of plain carpet or linoleum. Bright carpets, on the other hand, or ones with much pattern, require dark rugs and plain designs.

The hearthrug is a necessary finish to all rooms, and should be carefully chosen, since upon it the attention is almost immediately concentrated. It should be of good quality, since it receives a considerable amount of wear, as well as a certain unavoidable quantity of dirt and dust from the fireplace when a coal fire is

used. It should be restful and harmonious in colour and design, and should lie comfortably at the corners. It may be of the same make as the carpet, or of wool, sheepskin, or big game. Wool rugs, made at home, with a close thick pile are very fashionable just now; they are handsome and extremely durable, but are rather expensive to make. They are also somewhat heavy, and, unless well cleaned, tend to hold the dust to a considerable extent.

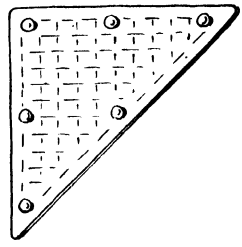


FIG. 31*a*.—A RUBBER CORNER FOR SEWING ON RUGS TO PREVENT CURLING.

If rugs are used on a wooden or linoleum floor, care should be taken not to have much polish underneath them, as there is great risk of accident through the rug slipping underfoot. A strip of sheet rubber about three inches wide sewn on to the under edge all round prevents rugs from slipping, and could be used on any rug where there is much traffic. Another device, known as the "Practical Rug Corner," also of rubber,

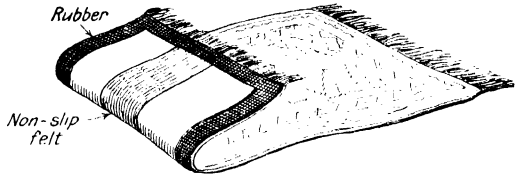


FIG. 31*b*.—RUG.
Showing rubber band round rug, also strip of non-slip felt down the centre.

By kind permission of Chalco, Ltd.

FIG. 31*c*.—A NEAT AND STRONG METHOD OF FIXING STAIR CARPETS.

prevents the corners of rugs from curling up, and so causing accidents. (Figs. 31*a* and 31*b*.) A kind of brass press stud can be bought for use with small rugs on polished floors, the rug being clipped on to the base, which is fastened to the floor. A most efficient material for laying under rugs is "non-slip felt"; though expensive, it is very wide and a strip down the middle of a rug prevents any slipping.

A point to remember in laying rugs, whether in a hall or room, is that they should follow architectural lines. That is, they should be parallel with the walls, whether near them or not. Diagonal lines create a feeling of discord, and are confusing and distracting. This applies also to furniture, generally speaking, though there are a few pieces that lend themselves naturally to a cornerwise arrangement.

CHAPTER V

WALL COVERING AND WINDOW DRAPING

WALLS. There are many different methods of treating walls, and the relative merits of the various types are here discussed, and the places for which they are most suitable.

Wallpaper. This is the most popular of all wall coverings; it is of extensive range in colour and design, and it varies in price from the cheapest to the very expensive. Its history is extremely interesting, and at one time a very high level of beauty in design and colour was reached.

The first papers were imported from abroad, chiefly from China, Chinese hand-painted papers being a feature of rich houses. They were used rather like tapestries, mounted and hung, but not, at first, stuck to the walls. As the merits of paper over panelling and tapestry and other textile hangings became more generally recognized, factories were set up which turned out long lengths by machine. Thus it became the cheapest and commonest form of wall covering, and deteriorated rapidly in colour and design in consequence. Owing to the rapid demand and changing taste of the public, good colours and designs became rare, and are even now less frequent than one could wish. There is, however, a return of feeling for artistic workmanship in papers, and in time perhaps they may be as much works of art as the delicate Chinese papers of early days, and take their place again with the other forms of art.

A feeling that wallpapers are unhealthy has arisen in recent years; a feeling justified by the practice common in the last century of putting one paper on top of another. As many as a dozen or even more layers have been stripped from old walls. The quantities of germs and spores that were harboured by such methods do not bear thinking of; but in modern houses, care is taken to strip off any old paper before putting up new, and, kept reasonably free of dust, wallpaper is as hygienic as any of the so-called "washable" distempers, and far more pleasant. Arsenic used in wallpapers caused illness.

Choice of Wallpapers. In choosing wallpaper, patterns, colour, and texture are of importance.

The *pattern* should be in accordance with the purpose and size of the room. Vertical lines lend height, and are somewhat dignified and remote in feeling; they may fittingly be employed in formal rooms, libraries, and dining-rooms. Horizontal lines minimize great height, and are restful. Diagonal effects, unless there is a counter effect to restore the balance, as in trellis pattern, should

be avoided, as they are unrestful and disturbing. Short broken lines, running in all directions, are agitating and confusing, and should never be employed. It will be noted that both diagonal and broken lines are unrestful, owing to the fact that they are not in harmony with the architectural features of the wall, which is a flat vertical structure, rising at right angles to the floor and supporting a horizontal ceiling. Any design which seems to suggest that the walls are at any other than right angles to floor and ceiling immediately disturbs our sense of balance, and gives a disquieting and restless feeling.

Curves in patterns, if fairly gradual and flat, are interesting and reposeful, but short curves with no continuity or method are nearly as irritating as broken zig-zag lines.

The size of the pattern is important—large ones make a room look smaller, and are therefore quite suitable for a very large room, but impossible in a limited space. On the other hand, small patterns tend to enlarge the appearance of rooms, and are therefore suitable for small rooms, where as much space as possible is required. Sometimes the pattern helps in adjusting the size of furniture to the size of the room, when one or other is out of proportion. For instance, a fairly small pattern will increase the apparent size of furniture which is too small for the room, while a large pattern will produce a dwarfing effect on big furniture. As, however, the size of the room itself will be affected by the choice of pattern, the exact size can be determined only by experimenting in individual cases.

Next to pattern, the *colours* to be chosen should be carefully considered. They should be in harmony with the general scheme, and can be either backgrounds and fairly neutral, or a positive decorative feature. Whichever is decided upon, the tone and colour should be somewhere about the middle of the scale of colour values in the room. In decoration, the usual rule is—floors darkest, walls middle, and ceilings lightest in tone. This distribution preserves harmony, and applies to any colour scheme. The walls should be neither too dominant, or they will seem to press upon the occupant ; nor too recessive, or they will give an appearance of instability ; but of a middle tone that will harmonize with the other values to produce a well balanced whole.

The warmer colours, i.e. those containing red and yellow, are more obtrusive than the colder, i.e. those containing blue ; they impress themselves more readily on the mind and are more exciting than the paler colours, which tend to recede. Thus, red decreases the apparent size of a room, while the lighter colours increase it. The same is true also of the lighter tones of a colour, more spacious effect being obtained with, say, pale blue, than with a dark blue. Part of the effect is no doubt due to the fact that pale colours reflect more light than dark ones, which tend to absorb it. Hence

the value of light colours and hues in brightening dark corners and rooms. Yellow suggests sunshine, and this, together with its reflection of light, makes it admirable for gloomy staircases or passages, or small dark rooms. Whatever colours are chosen, they should be clean and true in tone, and have a definite aim and object for their existence.

Attention is seldom paid to the importance of *texture* in a wallpaper. A plain-coloured paper gains greatly in interest if it has an engraved, crepe, or oatmeal surface. The smooth expanse of unrelieved colour is broken up, and a much more pleasing impression is obtained. Such papers in quiet colourings form dignified and unobtrusive backgrounds for general living rooms, informal dining-rooms, and libraries. Papers resembling stamped or embossed leather are also very satisfactory, and are easily kept clean. The old-fashioned flock and similar papers, however, hold dust, and should be avoided.

Papers for Various Purposes. For bedrooms, plain papers with restful designs and in light colours should be chosen. The bedroom is a place in which to sleep, and strong colours and irritating or large designs will defeat that end.

Special glazed papers, in tile or other design, are available for the bathroom and other places subject to periodic condensation of steam. They give a sense of cleanness and brightness, and are easily wiped down. When tiles are not available, good quality paper should be used, or one of the patent thick composition papers made to represent tiling, which are equally effective when properly fixed, and are less expensive. These papers should also be used in lavatories and closets. Where it is considered too expensive to put up a properly glazed paper, ordinary paper, coated with a special varnish after hanging, may be used. The varnish should be good, and applied carefully. It is quite satisfactory and cleans easily.

Friezes to use with wallpaper are obtainable; they may be a finish to a patterned wallpaper, or may supply a decorative note to a plain one. In either case they must harmonize with the wallpaper and the rest of the room. They are effective in making rooms look less high, especially if a picture rail is placed about 12–24 in. (according to the height of the room) below the ceiling, and the frieze underneath this. For this reason, they are inadvisable where the height is less than usual, as the ceiling will appear even lower than it is. Narrow friezes and edgings may be used to produce a pleasing panel effect when this is suitable; and the skilful placing of a dado or frieze in an entrance hall will often help to relieve some of the tremendous wall expanse near the stairs, with which it is always somewhat difficult to deal.

Buying Wallpaper. When choosing wallpaper, see the large pattern books, or the rolls themselves, and handle the specimens.

Thin wallpapers are not economical, except when they are to be renewed fairly soon. It is not advisable to make the final selection from small pieces, as the effect cannot be gauged with any accuracy.

To calculate the amount of paper required, measure the height in feet from floor to ceiling, or to as far below the ceiling as it is desired to cover. Next measure the perimeter of the room, including angles and projections, also in feet. Multiply perimeter by height and convert the answer to square yards. Wallpaper is always sold in pieces 21 in. wide, and 12 yds. long, with an area of 7 sq. yds. If the area of the room is now divided by the area of the pieces of wallpaper, the result will give the number of pieces to be ordered.

Example. A room is 12 ft. high and a 2 ft. white frieze is to be left, therefore height to be covered is 10 ft.

Height	= 10 ft.
Perimeter	= 54 ft.
Height × Perimeter	= 10 × 54
	= 540 sq. ft.
No. of pieces required	$= \frac{540}{9 \times 7} = 8\frac{1}{2}$ pieces.

As a piece cannot be cut, the number of pieces required for this room will be nine.

All pieces of wallpaper left over should be rolled up and put away carefully, as they are useful for repairs.

In a new house where the walls are not quite dry, it is a good plan to put up a cheap plain paper at first, which may be renewed later or used as a basis for distempering or painting.

DISTEMPER. The use of distemper has increased greatly in recent years. The walls are considered cleaner and more hygienic, as they can be washed when necessary, though a thorough cleansing is often difficult. Distemper is, moreover, very useful where fairly frequent decoration is necessary, as it can be renewed at little expense. It needs a good background to look and wear well, a cheap white paper being very suitable. This gives the distemper a better finish, and also minimizes the untidy appearance of a chipped distempered wall. Also, the joins of the paper beneath help to break up the monotony, and relieve the distempered appearance.

Distemper may be obtained in many pleasing colours, and in a smooth or a " matt " finish. Good effects can be obtained, and the laws of colour harmony apply here just as in the case of paper. It should be borne in mind, also, that there is less variation than is possible in wallpaper, and that there will be large areas of unrelieved colour.

Variations may be obtained by panel effects, and by distemper

in combination with patterned paper. An artistic use of stencilling, also, will relieve an otherwise monotonous expanse of wall in an effective and pleasing manner.

Distemper is more economical to use than paper, where the cost of labour has to be considered. It can be applied by the home worker more quickly and more easily than paper, though with practice very satisfactory results can be obtained with home-papering. It is very serviceable in small rooms, kitchens, passages,

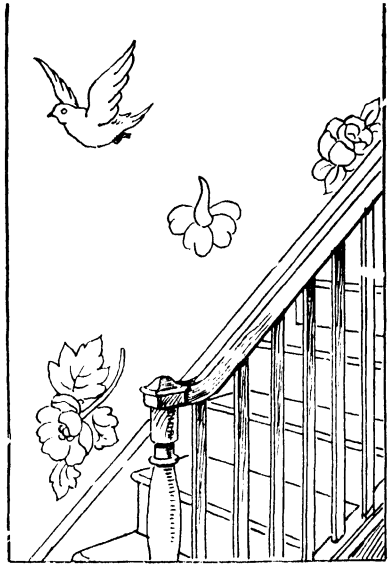


FIG. 32.—A SKETCH OF A WALL DONE WITH APPLIQUÉ PAPER.
This sometimes saves re-papering.

and offices; in sitting-rooms, unless a very good quality is used there is not that comfortable appearance which seems peculiar to wallpaper.

PAINT. Paint as a wall covering is becoming much more general. It is more expensive than distemper, but is preferable to it on account of its greater durability, and the ease with which it can be cleaned. It is obtainable in various colours, in "matt" or glossy surfaces.

A novel method of wall treatment recently seen may be mentioned here. In a small house the wall of the entrance passage and stairs was in a chipped and untidy condition, but funds could not run to the cost of complete re-decoration. There were two flights of stairs, both these and the hall being stained and polished;

the doors and door frames were painted white, and the distemper was pale green. A length of very good quality paper, rather thick, was purchased, which had a good design of roses, and trailing sprays, with an occasional bird, in natural colours. Sprays and individual flowers were cut out of this, and pasted most artistically over the worst places, chiefly up the stairs. The effect was unique and charming, and though the paper was expensive, and only half of it was used, the cost was considerably less than it would have been had all the walls been distempered. (Fig. 32.)

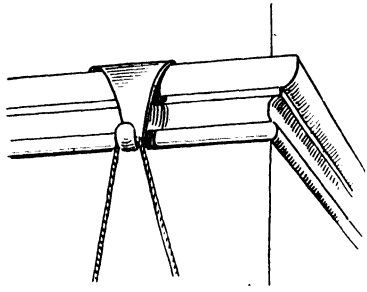


FIG. 32*a*.—THE USUAL CORNICE RAIL,
Projecting from the wall.

PICTURES AND PICTURE RAILS. A few words may not be out of place here in connection with pictures and their hanging.

Pictures. Good pictures are essential, and if many good ones cannot be afforded, one or two are preferable to a whole roomful of bad originals or reproductions. Water colours, oil paintings, and prints or engravings should never be hung together in the same room. The types of pictures in any one room should be similar—for example, all water colours, or all prints. Only a few pictures should be hung at a time, and changed occasionally if one is fortunate enough to possess a sufficient number. A more pleasant effect is produced if all the frames in a room are of the same type and colour, though not necessarily of the same size. It should be remembered that indifferent or unsuitable framing will spoil both the picture and the room; and if here is any difficulty in deciding on a frame, an artist friend, or a good firm specializing in artistic framing, should be consulted.

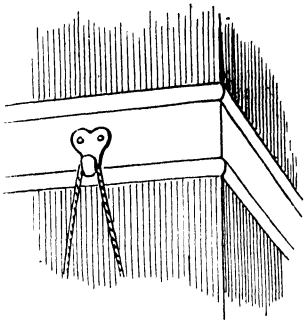


FIG. 32*b*.—A FLAT PICTURE RAIL.
No dust can collect.

Picture Rails. The moulded picture rail is a common feature in most houses, and has several recommendations. It obviates the necessity of putting nails through the paper or distemper into the plaster, where they may make ugly holes. (Fig. 32*a*.) Pictures hung on it may be shifted easily from one position to another

and are perfectly secure when hung. It is a useful decorative feature, making a pleasing finish to the wall, and a natural base, so to speak, for the white frieze above it. Dust, however, readily collects in the groove, and is removed with difficulty. To avoid this, a picture rail made flush with the wall can be built into new houses. This is a flat wooden strip about 2–3 in. broad, let into the plaster, and the pictures are supported by nails hammered in. No dust or dirt can collect, as the rail is included in the general sweeping down of the walls. (Fig. 32*b*.)

Hanging Pictures. Cords should be sufficiently long to allow pictures to come low enough down on the wall to be seen comfortably by a person sitting in the room ; and they should not be arranged in a zig-zag fashion, which gives a restless and irritating effect. It is a fairly safe rule to hang all pictures with their lower edges on the same level.

Picture Cords. Some people object to the triangle made by the cord and frame when the picture is hung from one nail. This may be got over by using a much longer piece of cord and passing it over two hooks or nails, so that it hangs in two vertical lines. Alternatively, two separate cords, one for each side, can be used. This arrangement should always be adopted for very large, heavy pictures, for which chains instead of cords may be employed.

CEILINGS. These may be of plaster, white or slightly tinted, covered with plain or patterned paper, or painted. Moulding, if it is good in design, and does not project much, adds to the appearance. Ceilings should always be light in tone, but they need not be absolutely white ; a faint tinge of the prevailing wall colour, or of any harmonizing shade, prevents the sense of violent contrast between the dead white ceiling and the rest of the room. Where there are oak beams, of course these should be left as they are, and not covered in any way.

Papering or painting is good ceiling treatment, hiding the unsightly cracks of the plaster ; and it can be cleaned, whereas white-washed plaster has to be renewed. In rooms where the ceiling is liable to be spoilt by the gas and smoke fumes, as in dining-rooms, billiard, and smoking-rooms, enamelled metal plates are obtainable. These are patterned, and are fixed to boarding in the ceiling, the joints being covered with moulding. They are easily cleaned as often as necessary with a damp cloth.

If much gas is used, it is as well to have plaster ceilings, as this absorbs any sulphurous acid given off by the gas before it can do damage by being converted to sulphuric acid.

TILES. For the bathroom and kitchen these are unequalled. They are impervious to moisture, are easily wiped down, and always look clean, bright, and attractive. They are, however, far too costly to install, and so are beyond the reach of many people. Wherever it can be afforded, however, it is a good plan to have

that part of the wall alongside the bath, and, if possible, the walls at each end, tiled to 2–3 ft. above the level of the bath top. This will take any splashing from the bath, and can be cleaned with little trouble. The rest of the wall can be papered with glazed paper, or with imitation tile paper. An enamelled zinc covering for bathroom use is also procurable, and is very serviceable. Care must be taken, however, in fitting the joints, or moisture will penetrate.

In kitchens, the walls may be tiled or covered with imitation tile halfway up, and finished with a smooth, washable distemper or paint.

WINDOW COVERINGS. Window draping is a feature of house decoration that requires almost as much thought and care as the covering of floors and walls, and the outward, as well as the inward, appearance has to be considered. The windows have been described as the " eyes of the house," and they are as important as any other eyes in expressing intelligence and personality. Windows with no curtains visible from without are as blank and expressionless as the eyes of a blind man, and the house looks cold, cheerless, and inhospitable. From within, likewise, curtainless windows look cold and bare. The large expanse of intense light requires some mitigating treatment ; and the curious gaze of the outside world must stop short at the window pane.

Characteristics of a Good Window Covering. The selection of a perfect window draping is dependent on a good many considerations. It must be such that light and air are not excluded, and yet the intensity of the light is moderated. It must not impede vision from within, but at the same time should preserve the privacy of the occupants. Also, it must be part of the general scheme of the room, and play its own part in decoration. It must be in keeping with the character of the room, and with the amount of light entering it. Finance, of course, is an ever-present factor, and the materials must be chosen with a view to their durability, and ability to withstand exposure to sun and wind for a reasonable period.

As windows vary considerably in form and size, the style of treatment must depend on individual requirements, but there are a few guiding principles that should be observed in any window decoration.

The Outlook of the particular window will be a guide to the manner of draping—for instance, if on a street, it must be draped to ensure privacy ; if on to a lawn, or beautiful view, an entirely different treatment, that will frame, rather than hide the outlook, is required. Such considerations will determine the general style of each window.

The Shape of the window itself must also be studied. The best effect is obtained by following the architectural lines as much as

possible. This, being in harmony with the construction, will at once convey an impression of dignified simplicity and good taste. For this reason, curtains look best if allowed to hang in soft straight folds. They may be held back loosely by loops of similar or contrasting material, but should not be themselves looped up.

The third consideration is the particular kind of *material* for each type of dressing. Some windows need heavy weight materials, others light ones; some must be opaque, others transparent, and so on.

The outlook of the room, style of treatment, and the materials to be used having been decided on, the choice of *colour* and *pattern* follows. Here individual taste will govern the selection, but the usual rules of harmony should still be observed. The curtains should stand in colour between the furniture upholstery and the colouring of walls and floor, that is they should harmonize both with the furniture coverings and with the background. Plain fabrics, of whatever colour, are best with patterned wallpapers. The amount of design on the curtains when plain walls form the background depends on the use of design in other ways in the room. It should be noted in this connection that "naturalistic" (i.e. birds and flowers) patterns should not be used in conjunction with strictly geometrical designs.

Overdraperies. In most houses the shape of the window seems to call for two sets of curtains—a lighter pair near the glass, and a heavier, more formal, pair that form side or overdraperies, which give colour, and which may, if necessary, be drawn over the whole window at night. This arrangement, with or without a valance at the top, is pleasant and practical, and may be adapted to almost any type of window. The light curtains may be of lace or net, in white, or cream, or in light shades; the side curtains should be of slightly heavier material (the exact degree of weight varying with the type of the room) and in colour harmony with the rest of the decoration. Where a set of two or three-sash windows occur in one wall, a good effect of unity is obtained by draping each window with lace or net curtains, and connecting the set by a valance and a pair of side draperies that frame the whole. This may be done with excellent results even when a wall space separates two windows—as a table or dressing-table can be placed as the centre-piece. (Fig. 33.)

Bay Windows may have curtains and overdraperies following the curve, or the overdraperies may be so arranged that they can be drawn right across the bay, while the light curtains are close to the glass.

Casement Windows may have short curtains on separate rods on the upper and lower halves of the windows; or thin net can be gathered on ("shirred on" is the correct term) top and bottom, to open with the pane, and overdraperies arranged on each side.

A valance alone, without side draperies, can be used on casement windows, but valances should not be employed if the room is very low, as they have the effect of reducing the apparent height. Advantage of this fact may be taken in dealing with very high narrow windows.

Dark Rooms. Window coverings in shades of yellow or rose will considerably lighten up a gloomy room, especially if they are

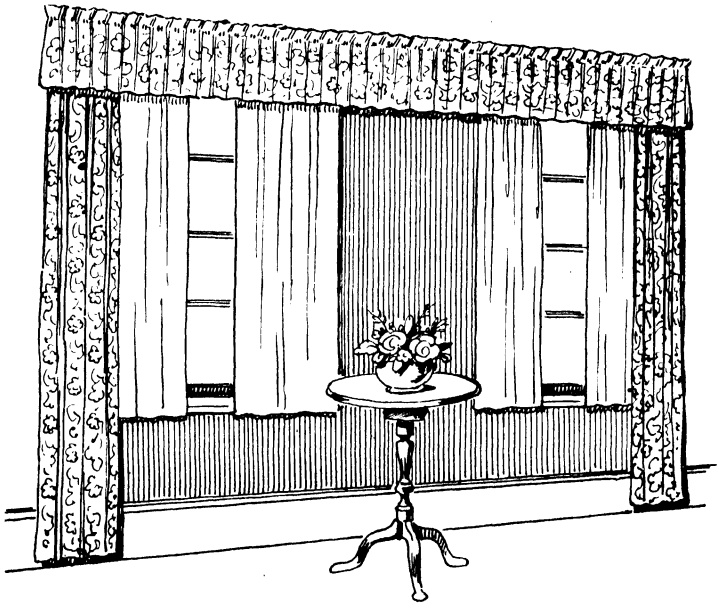


FIG. 33.—ILLUSTRATING A METHOD OF DRAPING TWO SEPARATE WINDOWS, which gives a more uniform appearance than if each were treated individually.

of materials through which the sunlight can filter readily, such as net or lace. A useful material is a square mesh net, in cotton, silk, or imitation silk. Beautiful colours, in plain or shot effects, are obtainable, and the curtains hang and look well. Though it is quite impossible to see through them into the room, they give a quite unobstructed view from the inside.

Lace. When lace is used, care should be taken to select good quality material, and good designs. Different designs are necessary for different windows, but it is quite possible to secure good and appropriate ones. As a rule, too little thought is given to the question of pattern in lace curtains, but it is astonishing what a difference it makes to the general appearance of the window; besides, choice of curtains indicates the taste of the mistress of the house. The use of lace in large and dirty towns is not very

practical unless there is opportunity for frequent washing—dirty lace curtains are an abomination. Its place is well taken by coloured nets; or by small curtains, of the casement type, that can be removed quickly and washed easily.

Many of the fabrics obtainable to-day are washable, except some of the heavier and more expensive ones. There is also a great advance in producing colours and materials that will wear well without fading or rotting. Many cheaper and less formal materials for use in bedrooms, children's rooms and nurseries, and

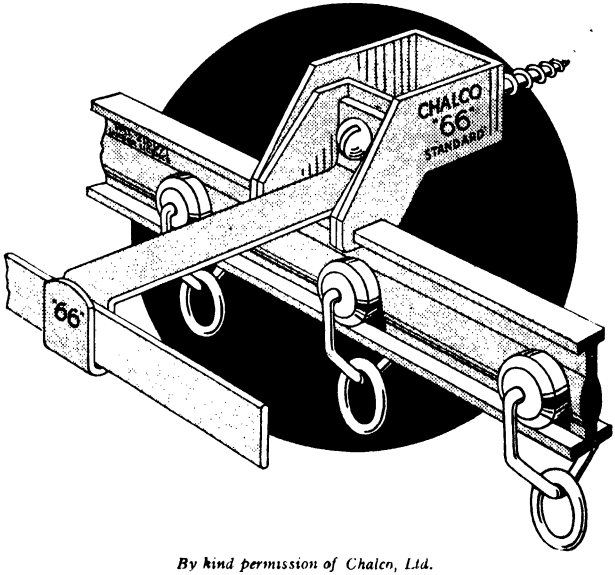


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FIG. 34.

AN EASY-RUNNING CURTAIN ROD.

Little wheels run along the metal rail, which can be bent to fit round corners.

in the country cottage are obtainable, and may be used with excellent effect. Whatever the styles of window covering adopted, whether formal or informal, cheap or expensive, the principles of selection enumerated above are equally important, and are independent of expenditure. One other point may be added: the external appearance of windows on any one side of the house should match, as far as possible, to produce a balanced and attractive exterior.

Length of Curtains, Rods, etc. A few facts regarding lengths and widths to allow for curtains may be helpful. Curtains close to the glass, as casement curtains hung inside the window frame, should just escape the sill. If hung outside they should just cover the lower edge of the frame. Lace curtains at long windows

should be just off the floor, or should come to the sill if used in conjunction with side draperies. These give a formal effect if they hang straight to the floor; if used short, they should come to the bottom of the woodwork.

Overdraperies and light curtains should be hung on separate rods, either by rings, or by hooks fastening into rings on the rods. They should move easily, without dragging or sticking. There are several good types of curtain rods on the market, which are specially designed to allow freedom of movement with the least possible strain on the curtain material. (Fig. 34.) Valances, if fulled, are also on rods, but if shaped or fitted they are usually tacked on to a wooden lath.

WINDOW BLINDS. Where thick curtains are used to draw across the windows, blinds are frequently dispensed with, but they are very useful for keeping the strong glare of the sun from hangings and carpets, and for preventing over-heating of the room by the sun in summer. They are nearly always attached to spring rollers nowadays, and may be in light or dark colours, with or without ornament, according to the room in which they are used.

The materials commonly used for blinds are unbleached or dyed linen, cotton, or mixtures of linen and cotton.

Linen Blinds are the strongest and wear longest, especially the unbleached variety called holland. This looks well in any room, but it may be obtained in dark blue or green for use where dark colours are preferred. If glazed, it has a good, smooth surface, and keeps clean a considerable time, but it tends to crack with exposure to sun.

Union and Cotton Blinds do not wear as well as linen or holland, but are useful in back windows and kitchens.

More ornate blinds, of linen trimmed with handmade cluny or appliqué lace, are suitable for drawing-rooms. The cluny lace ones are strongest, and the most expensive. Appliqué lace, being machine-made, is less serviceable, and only good qualities should be bought, as the net used in cheaper varieties will wear out very soon.

Plain holland and linen blinds in natural colours, trimmed with a fringe, vandyke, or embroidery, are also suitable for drawing-room use. These, in the same, or darker colours, but less ornate, are more useful in dining-rooms and libraries, and other living rooms. For bedrooms, blinds harmonizing with the general colour effect may be used, though dark blinds keep out more light and do not so readily show the dirt.

Venetian Blinds. These, happily, are fast falling into disuse. They are difficult to manage and to keep clean. They require re-taping and re-painting at frequent intervals—not to mention the constant labour involved in keeping them free from dust; and though they admit light and air, and at the same time shade the room, their disadvantages so far outweigh their advantages that in most cases they are being replaced by the usual linen or holland roller blinds.

CHAPTER VI

FURNITURE, FITMENTS, BEDS AND BEDDING

HOUSE furnishing and decoration go hand-in-hand, and the effect should be studied as a whole and realized as such before any money is spent. A sense of proportion will prevent undue emphasis on one feature to the dwarfing of another. The result should be comfortable, orderly, well-balanced and logical; not a series of disconnected units unrelated to each other. This effect of unity, which is instantly pleasing and restful, is attained by careful considerations of colouring, spacing and arrangement, and is not by any means dependent on the money spent; the most striking and pleasing effects are often those where funds have been economized as much as possible. For example, where several rooms open out of the hall or landing, the treatment of the walls and floors should be such that there is no sense of shock or discontinuity if two or more rooms are open to view at the same moment. This can be attained by using the same neutral wall-colouring, which makes a suitable background for separate colour schemes, yet provides a link between them. In a small house, the effect of the floor and wall treatment carried throughout the lower rooms, hall and stairway, is to give the suggestion of space by carrying the eye along without a jar or break that would emphasize the restricted area.

The style of furnishing is dependent on household requirements, expense, and size of house or room, and no hard and fast rules can be laid down. Some people possessing old furniture will arrange their rooms, as far as possible, to suit it. Others must buy new furniture, and money, perhaps, is limited. Much thought should be given to the planning, since the influence exerted by the rooms in which our lives are spent is said by psychologists to be much deeper, even if it be not consciously felt, than we imagine. Furniture, then, should be chosen for its satisfaction in use, which implies good proportion, beauty of design, comfort, and wearing qualities. Good furniture need not necessarily be in one of the "period" designs. These are beautiful, certainly; but for comfort, according to modern ideas, certain adaptations are necessary. Much excellent modern furniture is produced, good both in design and in finish, and in conformity with twentieth century ideas of health and comfort. (Figs. 35, 36*a* and *b*.)

Cheap furniture is a bad investment in every way: made of unseasoned wood, hastily put together without much care for fit and balance, poor in design, and badly finished, it may probably be made to look attractive, and "quaint," but is found sadly

wanting in use. Unseasoned wood cracks and shrinks, causing buckling and warping, and consequently doors fit badly or not at all; handles come off; drawers are difficult to open and to shut. What seemed attractive at first becomes a nuisance.

Good furniture, on the other hand, satisfies more and more the longer it is used, because of its suitability, finish, and efficiency. Old furniture is nearly always regarded with affection, on account of its thoroughly satisfactory character, hence it is always worth while getting old furniture, if it is *really* old. Faked "antiques" should be avoided, especially cheap specimens. On the other hand, there is no objection to copies of "period" furniture; if these are made by good firms, they will be perfect specimens of good modern work.

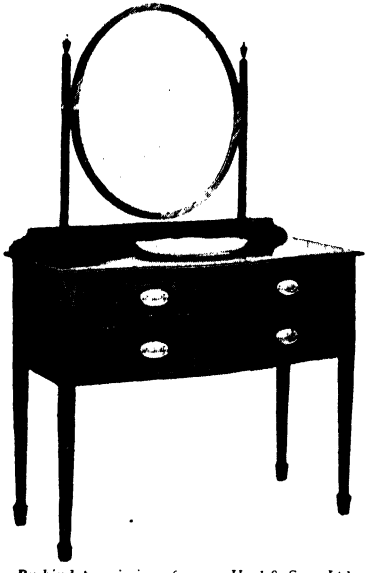

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FIG. 35.—MODERN DRESSING-TABLE.

Good furniture, however, is expensive, because the wood must be well seasoned and hard, and the seasoning takes time. Also, hard woods are more difficult to work than the soft ones of which cheap furniture is made, and the skill of the cabinet-maker has to be paid for. If funds are not extensive, it is sound policy to buy the absolutely necessary articles in good quality, and gradually to add the less essential ones as occasion arises. A few good pieces of furniture, well proportioned, and suited to the purpose for which they are required, give a well-furnished and thoroughly pleasing appearance to a room, whereas any amount of tawdry, indifferent furniture will convey nothing but a suggestion of bad taste and discomfort.

Modern Furniture. The great aim of modern furnishing is to minimize labour, and to this end, furniture is made smooth, and without ornate decoration. Ledges and carvings, if deep, collect dust and are difficult to clean. Such designs should be avoided. Most dressing-tables and chests of drawers are now made on legs, or at least are sufficiently off the floor to allow a broom underneath. For children's and maids' rooms, and wherever it is considered too expensive to put in polished furniture, good painted

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FIG. 36 (*a*).—A MODERN SIDEBOARD.

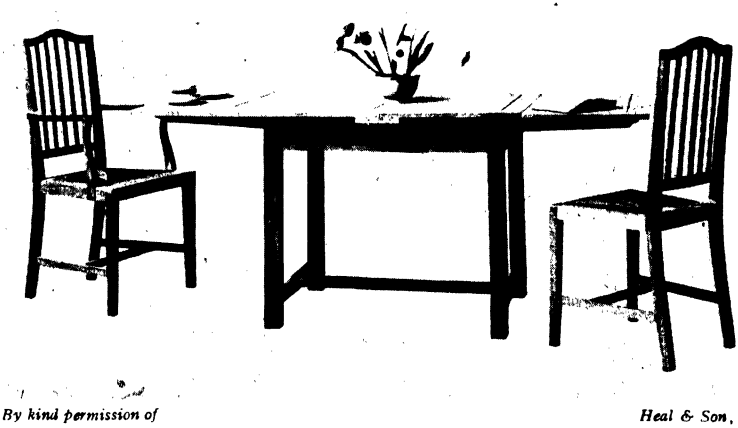

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FIG. 36 (*b*).—MODERN DINING TABLE AND CHAIRS.
The table is made to expand.

or enamelled suites are useful. They are easily cleaned and the paint or enamel can be readily renewed.

Upholstered Furniture. Upholstery should harmonize with the rest of the colour scheme. If loose covers are to be made, it is economical to buy the furniture with only its lining, and to have the covers made to fit properly. It is advisable to purchase upholstered furniture only from reliable firms. The general make-up of the chair or settee should be examined as far as possible. The springs should be tested, and should be adequate to give

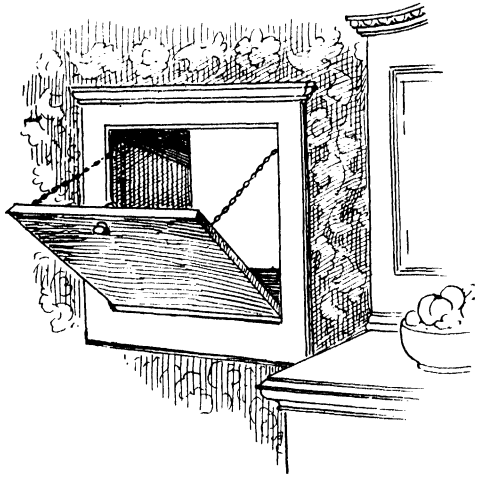

FIG. 37.—A HATCH BETWEEN KITCHEN AND DINING-ROOM.
Conveniently near the sideboard.

support where needed. The filling is preferably of hair, covered with wool, thick enough to cover wooden edges well. The seat should slope up to the front for comfort, and, in an armchair, be wide enough to take a large man comfortably. All upholstered furniture should have castors, suitably large and strong, and capable of moving easily in any direction. The use of "domes of silence" on chairs makes movement easy, and causes less wear on carpets.

The amount of pattern on upholstery depends on the rest of the room; but it should never be too flamboyant or dominating. A general all-over pattern is preferable to a large sprawling one. In colour, it may repeat one of those in the curtains or carpet, to give a sense of unity, and to harmonize generally with the scheme.

Labour-saving Furniture and Fitments. To give suggestions for furnishing the various rooms in the house is impossible, as tastes and requirements differ with every family. A few essential points

may, however, be touched upon, especially in regard to labour-saving. Wherever the plan of the house allows, much time and trouble is saved by putting in a hatch between the dining-room and kitchen. (Fig. 37.) The risk of smells coming through may be got over by suitable fittings. If the sideboard can be placed under the hatch, this is also a good arrangement; and it is better still if an opening can be made into the sideboard from the kitchen side, so that articles can be put back directly into their places after being washed. Where there can be no hatch, the relative positions of the door, sideboard, and table should be such as to reduce walking to a minimum. Cupboards, preferably "built-in," for keeping china and glass, tea sets, and so on, are useful in obviating much carrying. The dining-room itself should be cheerful—not, as many

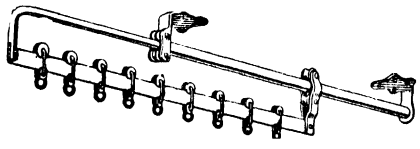

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FIG. 38*a*.—A NEAT AND HANDY WARDROBE ATTACHMENT FOR COAT HANGERS.
It slides easily out of the wardrobe, allowing clothes to be removed without difficulty.

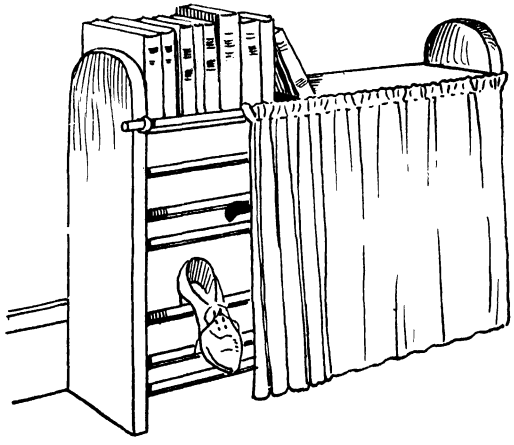


FIG. 38*b*.—A NEAT BOOT-RACK FOR A BEDROOM.

are, gloomy and solemn, since the enjoyment and consequent value of food is greatly stimulated by pleasant and agreeable surroundings.

Drawing-rooms and sitting-rooms are for amusement and comfort, and furniture should be well made, graceful, and strong. Overcrowding is in bad taste, and too many ornaments and pictures produce a distracting and muddled effect. Bookcases provided

with glass fronts protect the books from dust. Built-in cases are recommended wherever possible, and some cupboard room for work or games or children's toys is useful.

Passages and Halls should convey a sense of welcome, which is easier to obtain in a hall than in the narrow passage so often found. The individual case decides the furnishing, but some neat arrangement for coats, hats, and umbrellas is most necessary. Built-in

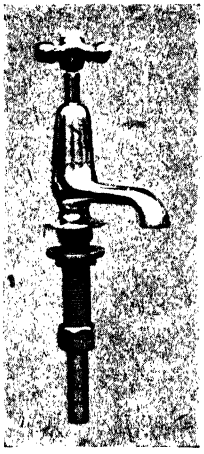


FIG. 39*a*.

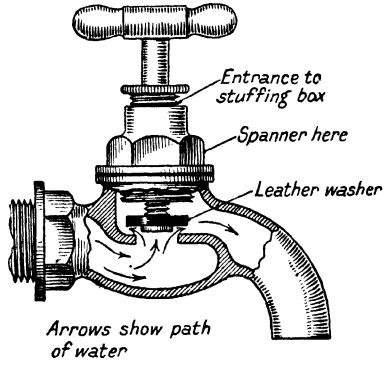


FIG. 39*b*.

TYPES OF MODERN TAPS.

cupboards, with shelves for hats, are neat and unobtrusive, and are preferable to the hall-stand or a row of pegs. The doormat should be sunk, to avoid spreading dust; but the recess is difficult to clear out. A movable tray of some light metal which could be lifted out would be a great convenience, but there does not appear to be such an arrangement on the market at present. It could, perhaps, be constructed by an ingenious member of the family.

Bedrooms. Here, again, built-in wardrobes and sliding shelves behind doors save space and labour, and are most convenient. A long mirror fixed inside one of the doors is useful. Where ordinary wardrobes are used, these are best if long enough to allow dresses to hang without crushing, and most useful if fitted with a rail for coat hangers. (Fig. 38*a*.) Space for hats is also desirable. Flat tops are preferable to the old-fashioned loose pediment, which is clumsy and collects dust. Washstands generally have marble tops, or, if

of polished wood, may have a sheet of plate-glass over a white toilet cover to match the dressing-table. Fixed lavatory-basins with hot and cold water laid on are becoming more frequent; they need not be at all unsightly, and are most convenient and save endless labour. Some neat arrangement for boots and shoes should be made. (Fig. 38*b*.) If bedroom furniture is simple and plain, but well-made and of good quality, the room will express restfulness, and be interesting as well as hygienic. Beds and bedding are discussed in detail at the end of the chapter.

Bathroom fittings should be as few as possible, and of material easily cleaned. The bath itself should be amply large, of porcelain, or porcelain-enamelled iron, fitted with chromium or nickelled taps to reduce labour of cleaning. The washbasins should be fitted similarly. (Figs. 39*a*, and *b*.) Plate-glass shelves or enamelled wall brackets are clean and useful. The towel-rail could be warmed from the heating system, and serve also as a small radiator. Some makers are advertising bathroom fittings for soap, brushes, etc., made of porcelain, and designed to fit exactly the space left after removal of a tile from the wall—" built-in " fittings in fact. A cork or towel bathmat, and a chair or fall-down stool, also a soft brush on a long handle for brushing round the bath after use, are useful; a mop or a cloth may be used instead.

Kitchen Premises. There is no reason why a kitchen should be gloomy: besides being an efficient workroom, it should be bright and cheerful. As the worker requires all the space possible, only the minimum of furniture should be allowed. Many houses have a dresser or china cabinet. (Figs. 40*a* and *b*.) Plenty of drawer and cupboard room is essential. If the kitchen can accommodate it, one of the modern cabinets is invaluable, especially where the cupboard room already provided is awkward or limited. These cabinets are fitted with labelled jars for all groceries, and provided with space for working upon, so that everything required is at hand. (Fig. 41*a*.) In the cabinet is sometimes a stores list, with markers to indicate what goods need replenishing, as a reminder for the weekly shopping. Where such a cabinet cannot be afforded, or where there is not room for one, a cupboard could be arranged to hold all the necessary supplies in glass or other jars, with pastry board, rolling pin, and other utensils near at hand. Glass jars are useful, as the contents can be seen at a glance. All jars should be kept covered and labelled.

A table of strong white deal, with a drawer, is necessary; this should be at a convenient working height, and in a good light, A chair, easy chair and a hearthrug add comfort. A refrigerator of adequate size should be considered essential. A dinner wagon saves many journeys, especially if the dining-room happens to be some distance from the kitchen, and on the same floor. (Fig. 42.) Cooking

By kind permission of *Heal & Son, Ltd.*

FIG. 40*a*.—A GOOD TYPE OF DRESSER, WITH GLASS DOORS ABOVE AND CUPBOARDS BELOW.

stoves and hot water arrangements are dealt with separately. It is, however, necessary to have the stove or range in a good light, so that the cook can see what she is doing, and the relative positions of store cupboard, table, and stove should be as step-saving as possible. All shelves, hooks, cupboards, etc., should be arranged so that there is the minimum of stretching or stooping.

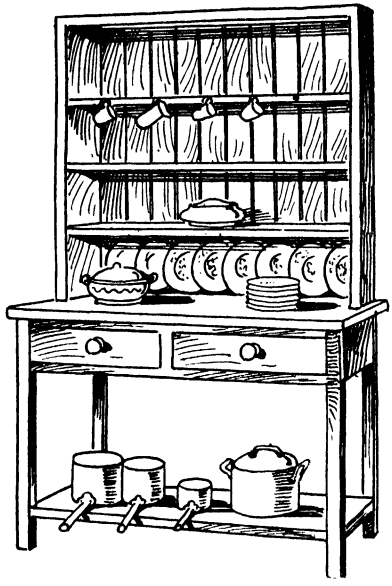
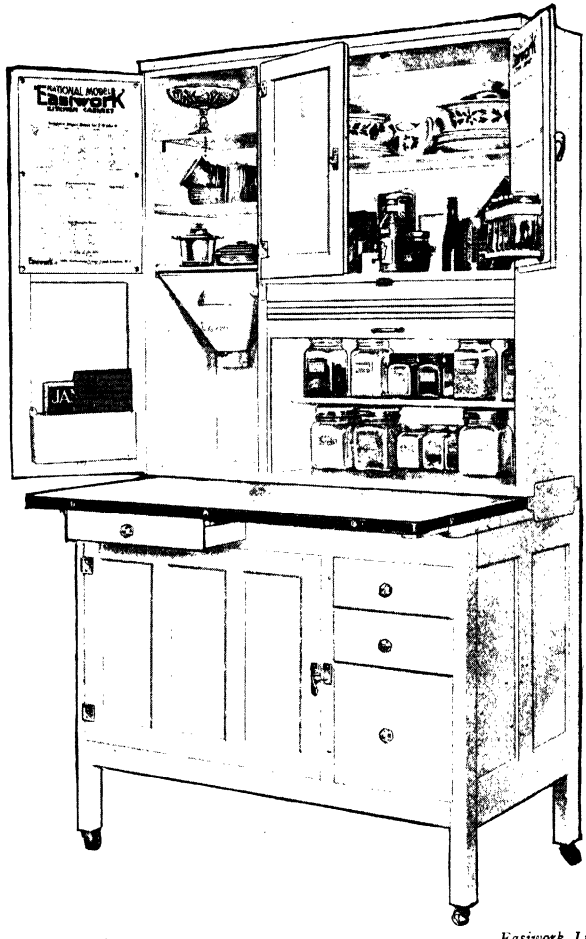


FIG. 40*b*.—UNDESIRABLE TYPE OF DRESSER.
Everything is exposed to dust, and the bottom shelf prevents a broom going beneath

The kitchen sink should be of porcelain, which does not absorb grease and is therefore easy to clean, and sufficiently deep to allow washing-up to be done in the sink itself, fitted with a stopper. It should be high enough to prevent stooping, and placed in a good light, preferably under a window, in either the kitchen or scullery (Fig. 43); the former is more convenient, time being saved on a shorter walking circuit. It should be fitted with grooved draining boards; where there is only one, extra ones may be fitted. The waste pipe should be trapped, and should run direct to the gulley. All necessary cleaning agents and utensils should be at hand. In the sink an enamel waste-basket for catching bits is essential, and a small block of wood for dirty pans to stand on saves blacking the sink. Plate racks to hold dishes and saucers, as well as plates of various sizes, are most useful. If the



By kind permission of *Easiwork, Ltd.*

FIG. 41*a*.—A MOST USEFUL PIECE OF KITCHEN FURNITURE.
Everything needed is kept together in one place.

By kind permission of *Electrolux, Ltd.*

FIG. 41*b*. REFRIGERATOR.

One of these is a necessary piece of kitchen equipment which should be in more general use. Apart from the prevention of wasted food in summer, food kept therein is in better condition, and can be safely kept longer than in an ordinary larder. They are obtainable in various sizes, and are made to run on either electricity or gas, are silent and economical and are easy to maintain in good order, provided the makers' instructions are followed. They should be cleaned out weekly. Care should be taken to see that a sufficiently large size is selected.

By kind permission of *Radiation, Ltd.*

FIG. 41*c*. GAS POKER.

A useful article where gas is laid on to the fireplace, as it can be used to ignite coa tor an open fire without the use of wood or paper, or to rekindle a fire that has died down. It should be lighted and put into the coal for 10 to 15 minutes, and removed when the fire has well started. It is economical both in time and gas, and saves all worry about dry wood for lighting.

cupboards for storing most of the china are close at hand, this will save carrying heavy trays. A wooden mat is useful for standing on, and a table covered with zinc or American cloth or anything easily cleaned and impermeable to water quite near the sink is invaluable. An iron saucepan stand is preferable to a shelf, so that the pans may be ventilated; this should be near the stove, if possible. (Figs. 44*a* and *b*.)

Convertible Furniture. Furniture is now made combining two pieces in one—as, for instance, a table that opens to form a very

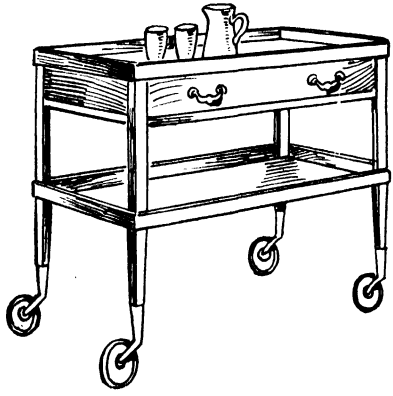


FIG. 42.—DINNER WAGON.
Invaluable in all houses where there are no steps.

useful dressing-table. There is a variety of designs, some very good; and a few pieces of furniture of this type, carefully chosen, are extremely useful, especially in bed-sitting rooms. A couch bed, with the third side removable, is useful (Fig. 45); or a settee that may be used as a bed. There are also bookcases concealing a folded bed. Convertible articles should be strong and easily worked, and be a definite asset to the appearance of a room. Elaborate mechanism should be avoided, as it is very liable to get out of order, and so waste time and energy.

Built-in Furniture. This is any fixed or fitted article of furniture that is built into the wall, replacing the movable pieces, such as the wardrobe and wash-basin already mentioned. (Fig. 46.) The advantages are very great. When wardrobes, basins, and the like are fixed in definite positions, there is much more room for the other articles, especially in small rooms. Time and labour are saved to a very considerable extent, as only those who have had experience of fitted furniture can adequately realize. It is

extremely convenient, very neat, and accords perfectly with any scheme of decoration. Also, it minimizes buying.

In houses already built, it is not, of course, practicable to build

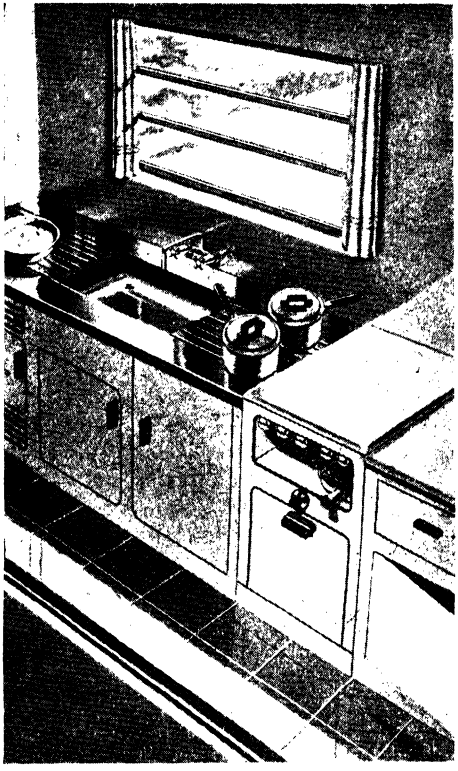


FIG. 43.—A LABOUR-SAVING SINK.

With a stainless metal top, placed under a window, and with draining board both sides. A gas cooker and a refrigerator are both incorporated in the design; the stove is enclosed when not in use

furniture into the wall, but the recesses on each side of the fireplaces, when filled in, serve exactly the same purpose. Deep recesses are excellent for hanging cupboards, one side being a wardrobe, with hat shelf, and the other fitted with sliding trays, behind doors matching the wardrobe. These trays are more useful and easier to manage than the usual chest of drawers. Shallow recesses could be fitted as bookcases.

Where the fitted article is flush with the wall surface, there is no top to catch dust, but it is more usual for the front to project into the room to a greater or less extent; where this leaves a space

for dust to collect, it could be closed in, the woodwork being carried to the top of the room, and so enclose a useful storage cupboard.

It is not suggested that the whole house should be furnished with fitted furniture, but it would certainly make the home more

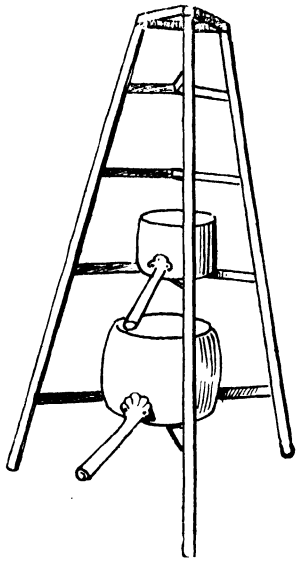


FIG. 44*a*.—A TRIPOD SAUCEPAN STAND
Which allows pans to be thoroughly ventilated.

easily worked if the principle were applied more extensively. Many of the pieces of furniture required by everyone living in a house could be supplied during the building, to the greater comfort

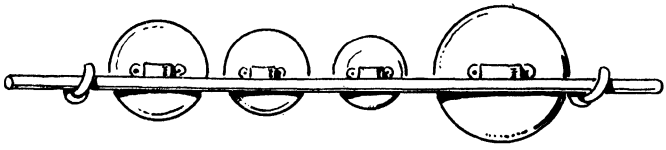
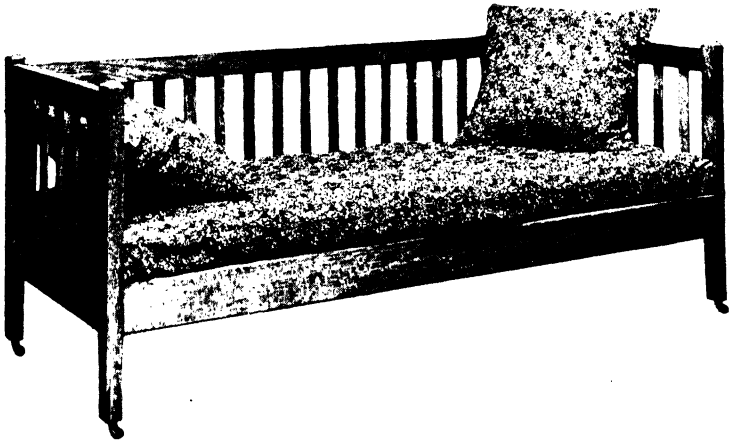


FIG. 44*b*.—A LID RACK MADE FROM A ROD AND TWO HOOKS.

and convenience of those living in it. Much can be done, however, by the tenant or owner in putting in more cupboards and shelves, etc., without any very great expense.

THE HIRE SYSTEM. Many young couples beginning to set up house have insufficient ready money to pay for a complete set of new furniture, and many furnishing houses allow a system of

easy payment, by which weekly or monthly instalments are paid after the furniture arrives. By this means, many new homes can be started which would otherwise be delayed or prevented owing to lack of money. There are, however, several disadvantages. The furniture does not belong to the householder till all instalments have been paid off, and it may be claimed by the firm that supplied it if the amount due is not paid in full within a certain time. Also, it is frequently of only moderately good quality, and the price ultimately paid would purchase much better goods. A method of getting over the difficulty of furnishing on slender means



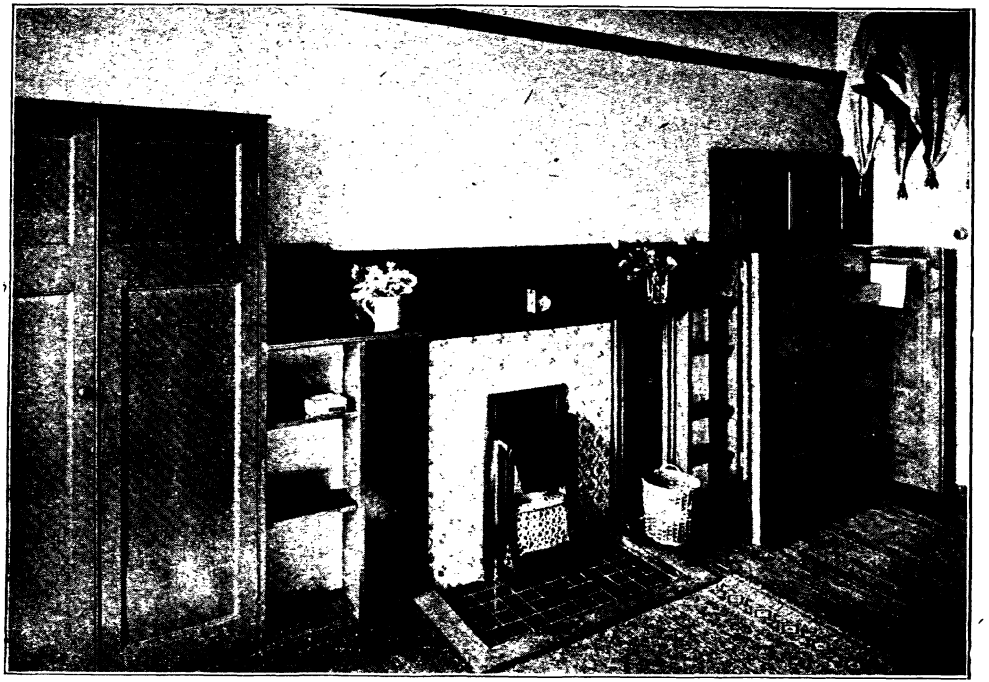
By kind permission of *Heal & Son, Ltd.*

FIG. 45.—A SETTEE-BED.

The back lets down if required; there is a spring mattress and an upholstered one, which is covered during the day. The pillows are slipped into cases and form cushions.

is to buy first such necessary articles as beds, chairs, and tables; and to make shift with dressing-tables, places for clothes, etc., made from packing-cases. Such furniture is strong and may be made quite neat, and if tastefully painted and decorated with dainty curtains and covers, looks passably well. It can be made at home by anyone with a little knowledge and taste for carpentering, and proper furniture can replace it by degrees as funds allow.

BEDS AND BEDDING. The chief function of these is to provide a restful sleeping place; hence the furnishing and decoration must be such as to induce calmness and repose. The bed is the most important object. The old four-poster, with its curtains and draperies, is a thing of the past, and modern beds are much simpler and more hygienic. Beds may be made of metal or of wood in a variety of designs. The latter are the more fashionable at the moment, though the former are more hygienic. The



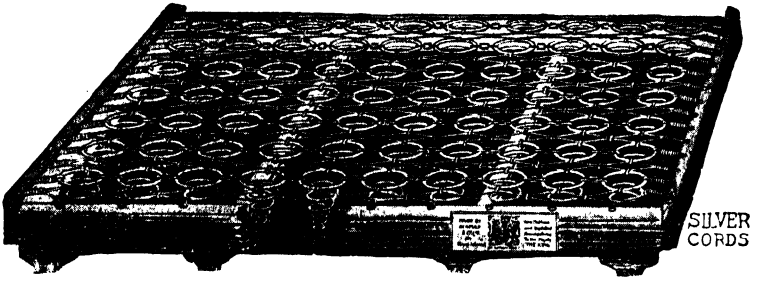
By kind permission of *King's College of Household and Social Science.*

FIG. 46.—BUILT-IN FURNITURE IN A BED-SITTING ROOM.

The cupboards are built into the wall; that on the right has sliding shelves for clothes, with a cupboard above. The left-hand one is a hanging cupboard, with hat shelf, and a long mirror fixed inside the door. The bookshelves are adjustable to any height.

plainer ones are the best, as they are freer from dirt and dust than those which have much carving or intricate work on them. Metal beds are of iron or brass. The iron ones are painted or enamelled in various colours to harmonize with the colour scheme. They are very easily kept clean and are washable. Brass bedsteads are handsome in appearance and hygienic. The plainer designs are preferable. A disadvantage is that they are rather inclined to be noisy and to respond to every movement of the sleeper. They are always lacquered, and care should be taken to keep this intact, as once it begins to wear off great difficulty is experienced in preserving a good appearance.

Spring Mattresses. All beds should be fitted with a wire spring mattress, of which there are many varieties. These may be o



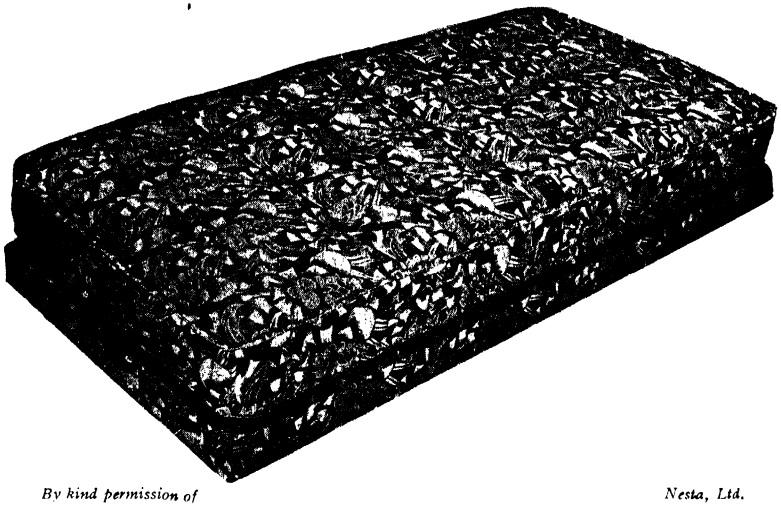
By kind permission of *Staples & Co., Ltd.*

FIG. 47*a*.—MODERN SPIRAL SPRING MATTRESS, CONSTRUCTED ON HYGIENIC PRINCIPLES.

The strong vertical springs prevent all sagging of the body, as they adjust themselves to its contour, thus supporting it in a horizontal position.

the chain type—made of short pieces of steel joined in a diamond-shaped mesh, sometimes strengthened with cross-pieces of coiled wire. A common type is of woven wire, with horizontal spiral springs, usually mounted on a wooden base, and provided with screws which can be tightened up as the mattress sags. These mattresses are quite efficient as long as they remain in good order, but they usually become very uncomfortable, as they sag more and more with wear, and further tightening is impossible. In this state, they are not good, as they cause the body to bend too much in the middle, cramping the internal organs, instead of allowing them to lie straight. Improved mattresses are now on the market; there are several makes, but the general principle is the same. The mattress consists of numerous spiral springs on a base, as in an upholstered chair; this allows the spine to remain perfectly straight, while the springs conform to the contours of the body. Some of these mattresses can be put on to the existing frame, and are certainly an advance on the old-fashioned type.

They are made for use either under an overlay, or combined with an overlay, being a spring and hair mattress in one. They are more expensive, of course, than the usual type, but for delicate people and indifferent sleepers they are worth installing. (Figs. 47*a* and *b*.) All spring mattresses, unless covered, should have a piece of hessian, bound at the edges, fastened over them with tapes, which is known as an underlay. The wire, being exposed to the air, and to moisture and warmth from the body penetrating the mattress, is liable to rust and stain the overlay; the hessian



By kind permission of *Nesta, Ltd.*

FIG. 47*b*.—ANOTHER MODERN MATTRESS, UPHOLSTERED AND VENTILATED.

prevents this, and also protects the overlay from friction by the wire.

Upholstered Mattresses. These may be of hair, wool, or mixtures of wool and hair. They are covered in strong tickings, and are prevented from lumping by stitches secured by woollen tabs.

Hair Mattresses, being made of horsehair, have practically everlasting wear, and are most comfortable and hygienic. They are the most expensive, but the expenditure is well worth while, as if the hair becomes matted and hard the mattress can be sent to an upholsterer, who will tease out and clean the hair thoroughly, repack it, and send back a perfectly fresh and good mattress. Re-making should not be necessary except at very long intervals; if the mattress is turned properly, and any small repairs are attended to at once, it will have no chance to become flattened.

Wool or Flock Mattresses become hard and lumpy very quickly, and are not recommended except for very small beds, when they

can be well shaken; they absorb more moisture and they have little spring and comfort.

Wool and Hair Mattresses also become very uncomfortable, the hair causing the wool to lump even more quickly than it does by itself. As this necessitates re-making fairly frequently, they are not economical. Hair mattresses, however, frequently have a layer of wool over the hair, just under the covering, and this makes the mattress very comfortable; and the wool, being above the hair, and not mixed with it, does not form lumps.

All mattresses should be bought from a reliable firm who can guarantee the purity of the materials used. At one time, any filthy rags were considered good enough for stuffing beds, but to-day all bedding material is subject to rigid Government inspection. Loose covers should be made for all mattresses, to preserve the ticking; they are easily removed for washing, and save much wear and dirt on the mattress itself.

Feather Beds. These should never be bought. They are thoroughly unsanitary, overheating, and exhausting, besides being too heavy for one person to manage properly when making the bed. They require much thorough shaking to keep them in good shape.

Palliasses of straw are not often used nowadays. Little mattresses of *straw chaff* (not hay chaff, which is too heating) are useful for infants, as it can be easily renewed at small cost as often as necessary: they are more hygienic than upholstered ones.

The choice of double or single beds is a matter of opinion, but in cases of illness, and where there is only one worker, single ones are more easily managed.

Valances and curtains may be used on beds, but care should be taken to keep them clean. The great objection to valances, however, is the temptation to make them cover a multitude of hygienic sins, and use the space below the bed as a receptacle for boots and boxes. It is unnecessary to point out the evil of this system, and the difficulty experienced in cleaning thoroughly. Side curtains are not objectionable, especially if the bed has movable arms to which the curtains are attached. They can then be moved away at night to allow free circulation of air.

Pillows and Bolsters. Pillows are usually filled with down or feathers, and should be covered in good quality ticking, to prevent the feathers coming through. In shape, they are usually oblong, but square pillows are also used, and are said to be very comfortable. The bolster should be wide enough to support the pillow comfortably, and as long as the bed is wide. Neither pillows nor bolsters should be hard; but if too sparsely filled they will be uncomfortable. Both should have loose white covers to preserve the ticking.

Blankets. Blankets must be warm without being heavy; they

should therefore be soft and fleecy, and made entirely of wool. The best and the most expensive are Aertex and Witney. Cheaper qualities in certain colours are obtainable, and are useful for extras or when others cannot be afforded. Cheap white blankets, however, should be avoided, as these usually contain cotton, and are much heavier and less warm than all wool. It is more economical to buy the best quality that can be afforded, as it will wear and wash well. If all white blankets cannot be bought, it is a good plan to get two instead of three for each bed, in the best quality white, and have one coloured blanket in addition. These, if all wool, are very warm and durable, and are cheaper than the white.

Owing to the fact that blankets are bleached by sulphur dioxide gas, the natural yellow tint of the wool sometimes returns, especially if the blankets are washed carelessly, and exposed to sunshine. They should, however, if treated with care, retain their whiteness and fleeciness for some time. For underblankets, old blankets can be used, cut in half or folded double.

For single beds, medium size, blankets should be 2 yds. wide, and for double beds, about 2½ yds., the length in each case being about 3 yds. In buying blankets it is as well to measure the beds first, and have the blankets measured when inspecting them, as sizes quoted in price lists are only approximate, due to the tendency of the finishing processes to reduce the size.

Eiderdowns. These are desirable adjuncts to both beds and colour scheme, being warm, light, and decorative. They are usually of down, the best coming from the eiderduck, and cheaper varieties from the goose and other water birds. Some less good qualities are made of down mixed with small feathers; and very cheap "eiderdowns" are filled with kapok, a vegetable down. These latter are quite efficient, but require much shaking to prevent lumps from forming. Eiderdowns are covered in satin, sateen, or cotton; in expensive qualities there is a specially prepared down-proof cover below the satin to prevent the down penetrating. Prices and quality vary considerably, but all should be well ventilated. All eiderdowns can be "plumped up" if they get limp, by well shaking, and then warming thoroughly before the fire, especially kapok ones.

Divan Beds. These are popular to-day, and are useful when space is limited and for bed-sitting rooms. They may be fitted with headboards, removable if necessary, and are best if fitted with interior sprung mattresses, though they can be quite comfortable with a good hair mattress if the springing in the base is good. They should not be too low for easy making. They should be easy to move, for proper cleaning underneath. If the mattress is thick, care should be taken to have bedding wide enough to tuck in comfortably.

CHAPTER VII

EQUIPMENT

HOUSEHOLD EQUIPMENT includes crockery, china, and glass ware; cutlery, metal ware, and cleaning materials.

A certain minimum of equipment is needed by the most modest household. It is unwise to attempt to provide this too cheaply; the best value that can be obtained for the money should be aimed at, and quality, rather than quantity, purchased. Although it is necessary to have some items of equipment in reserve, it is not advisable to buy more than is actually needed or likely to be used, in the hope that "it may come in useful some time." The extra money could well be expended on better quality, or saved to buy one of the more expensive labour-saving devices. On the other hand, all the articles necessary for efficient running should be purchased, inadequate equipment being a trial no housewife should be willing to endure.

In buying, choose designs and articles that will be labour-saving, for example, smooth surfaces and few angles, to prevent accumulation of dirt and consequent difficulty of cleaning. All equipment should be as durable as possible, and suited to the purpose for which it is intended.

CHINA, PORCELAIN, AND POTTERY. At a very early stage in the human race the use of clay for making vessels was understood. The wet clay was moulded and then dried, either in the sun, or later by fire, the latter method making it harder and more stonelike. Such rough ware is known as *pottery* or *earthenware*, and is porous. The ordinary flowerpot is an example. Later, a glossy covering, or glaze, was added inside, which allowed the pottery vessels to hold water. In the modern household such rough pottery is rarely used.

Stoneware represents a higher stage than pottery. It is made by subjecting the glazed clay to a higher temperature during firing, whereby it becomes partially fused or vitreous. It is rather heavy and thick, and will stand a considerable amount of hard wear, hence it is useful for kitchen and schoolroom use.

China, or Porcelain, is also made from clay, and takes its name from the country in which its manufacture has been understood and perfected for centuries.

"True" Porcelain is very hard, and is made from a naturally occurring substance—"kaolin," or china clay, containing felspar, together with fusible stone-like material. This, when mixed, moulded, and heated with the ground kaolin, melts, and forms a

vitrified, translucent substance. Porcelain is generally thin and delicate, and when broken has a glistening, smooth appearance. The finest porcelain was that made in China about A.D. 1660–1800.

Artificial Porcelain, or ordinary china ware, is made from a natural clay, not necessarily china clay, and suspended after moulding in a bath of flux or "frit," composed of sand, lime, flint, bone-ash, and other substances; the glaze is a kind of soft fusible glass, sometimes containing lead. China may be "hard-baked" or vitrified, or "soft-fired" or vitreous. The latter is more porous than the former, and the glaze is softer. The hard-baked china is more like porcelain, the glaze containing more felspar, and wearing better. For general use, therefore, a hard-fired china is preferable, being less likely to wear, and, if cracked, less porous.

China and Crockery. The china used in a house comprises breakfast, coffee, tea, and dinner services, dessert services, and some bedroom ware.

In selecting table sets, it is economy to choose standard patterns that can be matched in case of breakages. The pattern and colour are, of course, matters of individual taste, but a pleasanter effect is produced if they are chosen to harmonize in colour with the room in which they are used. There is no reason at all why the table sets should not actively contribute to the decorative scheme of the room, though, of course, colour schemes alter, and china lasts for years. Most makers can supply almost any desired shape or colour in standard patterns. This simplifies replenishing, keeps the stock up to the proper number of pieces, and obviates the need of buying a new set if several pieces get broken.

Plain patterns are preferable to highly ornate ones. Flutes, and intricate moulding with ridges and crevices difficult to clean, where dirt and sediment can collect, are undesirable features, from both a hygienic and a labour-saving point of view. Designs which facilitate thorough washing should be chosen.

Dinner and other services are usually sold in sets large enough for six or a dozen people. The number of pieces in a set varies according to the price, the more expensive having accessories not supplied in the ordinary sets. Lids of vegetable and other dishes should fit well, and cups should be well balanced on the saucers. Those patterns having a depression in which the cup fits are preferable to the smooth ones, as it is less easy for the cup to slip. The teapot should have a well-fitting lid, with a hole to facilitate pouring. In a well-designed teapot, the spout should be so curved that it will pour evenly, and without dripping after use. If a strainer is present, it keeps back the tea leaves, but makes the cleaning of the spout more difficult.

All goods should be examined before buying to see that there are no flaws or cracks. Flawed or misshapen articles will usually be replaced by the shopman if the fault be pointed out before

purchase. In some cases, as, for instance, in kitchen ware, the purchase of slightly flawed articles is economical. The flaw is usually quite small, and though it renders the piece useless for inclusion in a set, it is generally quite good and sound otherwise, and very much cheaper. Slight irregularities in the pattern or shape are of no account for kitchen use, and a much better quality can be secured than would otherwise be the case. Cracked goods, however, should never be bought.

Bedroom ware should harmonize with the colour scheme, and be pleasing in design ; small jugs are easier to handle than large ones. Good quality should always be bought, as inferior toilet sets soon crack. To minimize the risk of breaking the basin and other pieces on the washstand, it is advisable to have thick mats.

Daily Care and Storage of China. China in use every day should be well dried, with a polish, and kept in cupboards free from dust. Articles of a similar kind should be kept together ; cups and jugs should hang on round cup hooks, as the square ones tend to cause the handles to break off.

Before storing china, see that the shelves are strong enough to bear its weight, as it is very heavy. For the same reason, plates should not be piled up very high, as the lower ones may break. Lids may be turned upside down on half of the vegetable dishes as this allows the rest of the dishes to stand in them and so economize space. In larger houses, proper cupboards for china are provided in the china pantry, in which glass also may be stored. Delicate china, ornaments, and vases should have separate shelves in the cupboard.

Kitchen and Cooking Ware are usually classed as crockery, and are coarser and heavier than china. They should be chosen with a view to wearing qualities and ability to stand hard use. The glaze should be good, so that washing is made easy ; and without cracks, to prevent absorption of liquids. Basins are usually bought in sets, capable of holding from half a pint to a quart. The edges should be quite smooth, and the bases perfectly level. Milk and other jugs should be straight and easily washed, the mouth large enough to allow the hand to be inserted. A jug marked from $\frac{1}{4}$ pint up to 1 quart is invaluable for measuring.

Labour-saving crockery, such as casseroles and fire-proof china, should be purchased. The use of casseroles for cooking renders it unnecessary to have dishes for serving, as the food can be carried straight to the table in the vessel in which it is cooked, thus saving time, labour and expense. Casseroles, however, should be chosen carefully ; they are glazed only on the inside, and with a glaze which is very liable to contain soluble lead. As this can be dissolved in the processes of cooking by the vegetable and fruit acids in the food, it is dangerous. Cheap qualities should therefore be avoided, and only the best makes purchased. Leadless glaze

should be obtained whenever possible. Casseroles are rather brittle and liable to crack in use. This tendency can be overcome to some extent by putting the new vessel into a nearly cold oven, and allowing it to become hot very slowly, after which it should be allowed to cool slowly.

GLASS. There are many varieties of this, but the basis is the same for each, the addition or omission of substances altering the composition of the glass. Variations in the method of handling, also, produce different results in the finished article.

Glass is made by fusing a mixture of substances in a fireclay furnace at a very high temperature. The raw materials are various, but the essential ones are silica in some form, either sand or felspar, and some alkaline substance, of which the carbonates of potash and soda are chiefly used, also sulphate of soda. Lead oxide and lime are used in certain glasses.

The requisite materials for any glass are carefully mixed in the desired proportions, and heated until a molten viscous mass is obtained. This is then removed and worked up, by blowing, pressing, or rolling, into the articles for which it is intended, and finished by annealing in a kiln. During the working of the glass, the cooling takes place at different rates, setting up strains which would cause the finished glass to break with a slight scratch or crack. The process of annealing, that is, heating followed by very gradual cooling, removes these strains, and the glass cracks less easily.

"*Blowing*" is done to produce most hollow-ware, such as decanters, bottles, tumblers, etc., either by the unaided powers of the blower himself, or, for heavier or coarser articles, by compressed air; and moulds are also used sometimes to give the final shape to the articles, especially when they have any awkward angles.

"*Cut*" *Glass* is flint glass, which contains lead, and is therefore generally heavier than ordinary glass of the same thickness. It is clear, hard, and bright. The cutting may be done by a diamond, but more usually, for the better kinds of table and other glass, by rapidly-revolving emery or carborundum grinding wheels, and polished by hand. Only the best kinds of flint glass can be cut successfully.

Imitation "Cut" Glass is made by pressing molten glass into moulds. These moulds are jointed to facilitate removal of the articles, and little ridges of glass are pressed into them. Also, the contact of hot glass with any surface causes a certain roughness and spoils the fine polish glass possesses when allowed to cool without touching anything. To restore the polish, the "pressed glass" is heated by a flame, which slightly softens the patterned surface, and removes roughnesses, but causes all edges to become blunt. Hence all moulded glassware can be identified by the

ridges or " fins " of glass left by the moulds, and by the rounded, instead of sharp, edges in the pattern. Some makes of such glass are quite good, and occasionally the pattern is improved by slight cutting and polishing, but very much of it is cheap and worthless.

Plate Glass is used for shop fronts and mirrors, and is made by rolling out large sheets of molten glass to the required thickness, then grinding it smooth with sand, and polishing with a paste of rouge and water. When used in mirrors it is generally bevelled, i.e. cut at an angle from front to back, at the edges, and polished.

Obscured Glass. Glass used for windows where light, but not transparency, is required is made of cheaper materials and less carefully than plate glass, but in the same way ; it generally has a pattern on one side which is made during the rolling, to hide the roughness of the surface. The purposes for which such glass is used do not need a high degree of finish, and the colour is sometimes inferior.

Sheet Glass, used for windows, is much thinner and less perfect than plate glass. Although it is colourless in the thin sheets in which it is used, it often produces distortion of objects seen through it. It is made by blowing long cylinders of glass, which are then split and flattened in a kiln. After annealing, the sheets are washed in a weak acid bath, dried, and cut up.

Crown Glass is seldom used in these days, though at one time it was employed in window glazing, and can still be seen in old houses.

Bottle Glass is the cheapest and commonest glass made, and is unpurified, hence the green colour.

" Etched " Glass of good quality is generally rather costly, as the process is difficult, and is done by hand. Cheap etched glass, however, is made by coating the glass with wax, scratching on the required pattern, and exposing the object to fumes of an acid which eats away the glass in the uncovered portion, leaving the pattern when the wax is removed.

Table Glass for best use may be cut or etched, but is too valuable and expensive for general use, for which plain patterns that are easily matched are more suitable. Good quality moulded glass dishes may take the place of cut glass ones for everyday use, but only the better kinds in this glass should be purchased. It should be bright and smooth, and well finished inside. Glass water jugs should be of a pattern that can be easily cleaned and dried inside, as water sometimes leaves a deposit, and jugs used for drinking water should be as carefully cleaned as milk jugs. Thick tumblers crack more readily than thin ones when suddenly heated.

Bedroom Glass should be well made, strong, and of good quality. Water bottles of plain shape and made to hold the tumbler inverted are best.

Mirrors should be of the best plate glass. These are always expensive, and cheap ones are to be avoided, as they will become patchy and black in time. A good mirror is nearly always bevelled, cheap glass not being worth the trouble and expense of this operation. Mirrors are made by treating the back of plate glass with silvering preparations; nitrate of silver is generally used, and the metallic silver is precipitated on to the glass by treatment with a solution of Rochelle salts or some other reducing substance; the thin film of silver is then coated with paint to prevent injury.

In handling glass, shocks and jars should be avoided, also extremes of temperature; e.g. hot glass should never be stood on cold metal or stone; and cold water should not be allowed to touch hot glass. Glass tumblers should not be placed inside one another for storing, or carrying. All glass should be well dried and polished, and kept in a dry place free from dust, as both damp and dirt affect the fine polish; for long storing, wrap in tissue paper. Tumblers, after drying, should always be put away upside down to keep out dust, and not in contact with each other.

Recently, glass for cooking purposes has come into use. This is a specially prepared heat-resisting glass, very hard and durable. The advantages of this over ordinary china or enamel cooking utensils are: (1) it is very hygienic; (2) easily cleaned; (3) labour-saving, as food is served in the same dishes; (4) food can be seen in process of cooking; (5) very attractive appearance on table; (6) withstands constant use, if treated with reasonable care.

SILVER. Silver is largely used in the household for ornaments and utensils, and as table silver. The pure metal is soft, and too brittle for use alone, and it is generally mixed with copper to harden it. English solid silver articles are "hall-marked," i.e. stamped with the mark of the Goldsmith's Company (lion), which guarantees the standard. Other marks are also found on silver, and indicate its maker, and the date of manufacture; these vary considerably, especially on old silver. Experts can obtain a great deal of information about any particular article by an examination of the marks, which frequently include a presentment of the head of the reigning sovereign. Old silver varies in value according to its weight, design, and age; some of it is much thinner and softer than modern silver and requires great care in handling to prevent bending. Solid silver table appointments are very desirable; when well kept they are beautiful in appearance, and wear indefinitely.

Some silver articles are silvered only on the outside, over a core of other metal. Electro-plate is made by putting articles of white metal into a bath containing silver salts, and passing an electric current through. The silver salts are split up by the current, and metallic silver is deposited on the article; the value of such plated goods depends on the thickness of the silver coating. Good

electro-plate is guaranteed for twenty-five years, and looks very well. As a white metal is used, it will not show dark patches as the silver wears off. Electro-plated nickel silver is a silver-plated metal containing copper, zinc, and nickel, and is marked E.P.N.S. It also will wear for many years.

Table Silver. Solid silver is the most expensive, and a valuable possession. The prices vary according to the weight, and to the market value of silver at the time of purchase. Spoons and forks are produced in six or eight standard patterns, of which the plainer are more easily kept clean. (Fig. 48.)

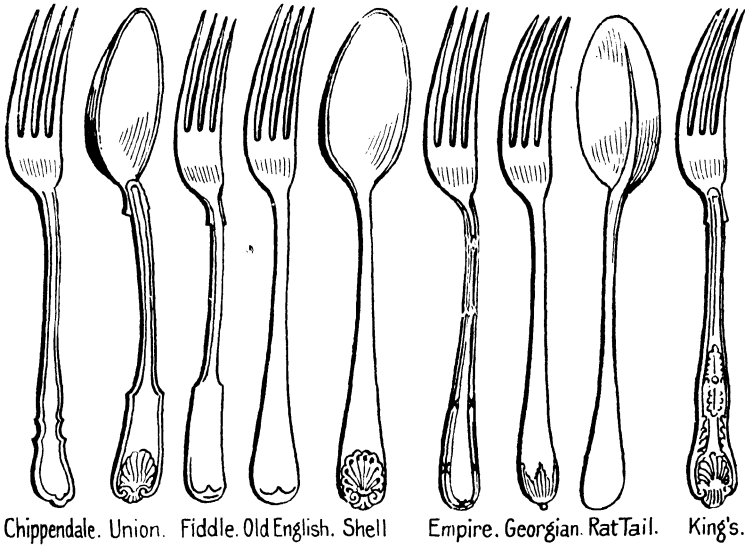


FIG. 48.—DESIGNS IN TABLE SILVER.

Spoons and forks are obtainable in electro-plate also, of which a good quality should be purchased. It is not generally difficult to distinguish at a glance between silver and good plate ; one reliable test is to put the two articles, e.g. spoons, into hot water, leaving one end out. Heat will travel much more quickly along silver than along plated goods, and silver spoons become almost too hot to hold in a few moments.

Sheffield Plate. This is not manufactured to any great extent at the present time, as copper is too valuable, but old pieces are greatly valued. It was made by welding a silver coating on to both sides of copper. Articles so made were often beautifully designed, with delicate and intricate patterns. It can be identified easily by the fact that the silver has worn off the parts most

exposed, such as the feet of trays, so that the copper foundation is visible.

Storing Silver. Silver or plate in general use should be kept neatly in a leather-lined basket or wooden box with a cover of leather. Forks and spoons should be kept separate, as the spoons are liable to be scratched by the sharp points of the forks. Silver should be well polished before being put away, and on no account should it be dropped or bruised. A careful check should be kept on all articles. Large solid silver plated articles in daily use will be free from tarnish if placed in cotton or leather bags, in a cupboard.

Silver put away in store should be perfectly clean and well polished, and wrapped in blue or white tissue paper; spoons and forks should have a layer of paper between each to prevent scratching. The paper-wrapped bundles can then be kept in bags of chamois leather or flannelette, but baize and other woollen material should not be used (contrary to general custom), as wool contains sulphur, which combines with silver to form silver sulphide or tarnish. Silver stored as above, in a dry place, will keep bright for a very long time, only requiring a rub when wanted for use. A good system of storing table silver is to make a flat case with compartments for each kind. This, if fitted with tapes, can be rolled up and tied. Articles sold in leather velvet or satin-lined cases should be kept in them, and replaced immediately after use.

CUTLERY. It is very necessary to get a good quality in all cutlery, as inferior knives will not wear well. Until quite recently, ordinary steel knives were the only kind available, but they are being rapidly superseded by the stainless steel.

The steel of which good knives are made is very strong and highly tempered. Steel is made by mixing iron with a due proportion of carbon, and certain other rare substances, and heating to a high temperature, after which it is plunged into water to cool suddenly, and again heated and cooled. This process causes it to become very hard and brittle, but very elastic, and capable of bending to a great degree without breaking, afterwards springing back to its original position. It takes a very fine cutting edge, and a high polish.

Table Knives. The best come from Sheffield. These are made in two parts, blade and handle; the blade is fastened into the handle (which may be of ivory, bone, wood, or metal) by an iron "tang," sometimes short and cemented in, or, in better quality knives, carried to the end of the handle and riveted. The blade at the handle end terminates in a curved shoulder. A well-made knife, when laid flat, balances so well that the blade does not touch the table. The polish should be bright, the surface smooth, and the edge sharp. The blade should be almost rigid in a new knife, but as knives get old and thin they bend much more.

Carving Knives are of different sizes and shapes. For carving large joints in the kitchen, long thin knives are made; but for table use a firm broad knife, slightly curved, for ordinary carving, and a short, stout knife with a point, for game and poultry, are generally all that are required. The handles may be of bone, ivory, or horn, but they should allow of a firm grip. Carving forks should be strong, curved, and provided with a spring guard.

Kitchen Knives should be sharp and of good quality. A variety of kinds is a considerable help to good work; there should be one at least of the following—

Pointed, or "cook's," knife, in two sizes.

Vegetable knife, with point; and a special knife for onions.

Round-bladed knife, for scraping bowls; if this is broad, it is useful as a palette knife; or the latter may be included separately, and is invaluable for lifting fried eggs, baked fish, etc., from the pan without breaking when a fish slice is not available.

The handles should be firmly fastened on; black wood is the material generally used, riveted on, to allow for washing; if larger than on ordinary knives, they give a better grip.

Care of Knives. All knives should be kept very clean, bright, and sharp, or they are useless. They should be rinsed immediately after contact with acids of any sort. Steel knives are kept sharp by constant cleaning, especially in knife machines, but they should also be sharpened regularly with a good steel. This should be learnt and practised by every housewife.

To sharpen a knife, hold the handle in the right hand, and draw the blade in a slanting movement down the length of the steel, from handle to point, on the upper side of the steel and on the lower side alternately. This should be done rapidly, several times, till the edge is sufficiently sharp; dexterity comes with practice. There is on sale a handy little knife sharpener, with over-lapping wheels, which gives a very good edge.

Storing Knives. Knives in general use should be kept in a wooden box or drawer, preferably lined, all the blades pointing in one direction; table and cheese knives should be kept separate.

Knives in store are prevented from rusting when well rubbed with vaseline or some other saltless fat. They should be wrapped separately in tissue paper and then rolled up in newspapers or brown paper, with blades and handles placed alternately.

Steel knives, after long use, get very thin at the ends, and sharp on both sides. The thin end may be broken off, and the stump edges filed down a little, when the knife makes an excellent peeler.

Knife Cleaners save much labour in cleaning. They may be obtained in many different makes and sizes, for cleaning one to a dozen at a time. Care should be taken to get a good, well-made machine that will not get out of order or damage knives. The directions should be read and carefully followed.

Stainless Steel Cutlery. In recent years, steel knives that will not stain in any way have appeared on the market. They are superior to ordinary steel knives and can be used for anything, requiring only washing and wiping to produce a beautiful polish. The steel of which they are made is much harder than even ordinary steel, and therefore it is more difficult to get a keen cutting edge. Also, the fact that they do not have to be cleaned prevents the edges of the knives from getting sharpened automatically, and they should be sharpened periodically on one of the special sharpeners or on an ordinary steel. There is reason to believe,[1] however, that sharp knives will soon be produced in stainless steel; research and improvements are constantly taking place, and there is every prospect of a widely extended use of this metal, at moderate prices, for saucepans and cooking utensils. At present, the price of stainless knives is higher than for ordinary steel, but the extra outlay is well justified. Stainless steel is used chiefly for knives, but it is also employed in some makes of fire-grates; these, however, though beautiful in appearance and easy to clean are at present expensive.

Sheffield has the monopoly of stainless steel and, in buying, this name and the name of the maker should be on each knife. Certain so-called "stainless" knives have been known to exhibit rust-marks and streaks; all knives having the name of Firth, Sheffield, are made from genuine stainless steel.

METAL UTENSILS. The metals used in making household utensils are iron, galvanized iron, copper, enamel, aluminium, and tin.

Iron is used mainly for saucepans and kettles, and is usually tinned or enamelled inside to prevent rust. When treated with ordinary respect, cast iron saucepans wear for years. They are very strong, but brittle, hence care must be taken not to drop or knock them; but except for this, little hurts them. Wrought iron saucepans are less brittle, and more durable, but heavier. They must, of course, be kept very free from rust, especially if the tinning shows signs of wear.

The great disadvantages of iron pans are (1) the weight, and (2) the very long time they take to get hot. If large iron pans are used, a round loop-handle in addition to the ordinary one facilitates lifting. The other objection cannot be overcome; but care must always be taken to see that the bottom and outside is always clean and free from soot or dirt of any sort, as this will increase the time spent in heating up. This applies especially to kettles, which are sometimes put directly on the fire.

Enamelled Ware. This is made of sheet steel or thin iron coated

[1] Since this was written, a great advance has been made in producing sharp stainless knives, and they can now be obtained with as keen an edge as ordinary table knives.

on both sides with enamel. Enamelled goods are very hygienic, and are easy to keep clean. They chip if roughly handled, and once the enamel comes off, the iron underneath rusts very quickly into a hole, and there is no satisfactory way of repairing chipped enamel ware. A good quality is necessary, as cheap ones chip too quickly. Enamelled ware used in the household consists of saucepans, kettles, pie dishes, jugs for carrying hot water, pails, bowls, spoons, etc. As long as they are treated carefully, all enamelled goods wear for years, as the enamel is unaffected by the atmosphere. Coarse abrasives, however, should be avoided, as the polish may be scratched badly, which spoils the appearance, and tends to make the enamel crack in time.

Enamelled pans, with well-fitting lids, are very useful for storing flour. Safes for keeping cakes and pastries are obtainable in various sizes, enamelled white inside and some other colour outside ; they have shelves, and are ventilated.

Copper is used in the household chiefly for saucepans, kettles, and preserving pans. It is expensive but wears for years. The utensils are generally tin-lined to prevent contamination of food. Preserving pans are usually copper throughout, though occasionally they may be silvered inside. Copper saucepans heat very quickly, copper being one of the best conductors of heat, and also, when kept well burnished, retain heat far longer than iron or enamelled saucepans of the same size. This is because the heat which would be given off by radiation is reflected back into the interior of the pan, and so does not escape as readily as if the outside and inside surfaces were dull.

It is important that copper goods should be kept bright and in good condition, as the salts of copper formed when they tarnish are very poisonous. The oxide of copper formed unites with carbon dioxide, to form copper carbonate in moist air (verdigris), and vegetable acids and vinegar left in contact with this form copper salts. Cooking foods in copper is not injurious unless the saucepan has not been properly cleaned. Handles of kettles and lids are generally of wood, or some less good-conducting material than copper, as this gets too hot to hold. Saucepan handles are generally of steel.

Aluminium. This is widely used for saucepans and kettles and preserving pans, but as the pure metal is rather soft an alloy is used. The heavier makes wear better than the thin ones and, though more expensive, are more durable. Aluminium ware is very clean, and a good conductor of heat. It does not rust or tarnish. Soda should never be used for aluminium goods, as it dissolves the metal, and forms a dark deposit of aluminium oxide. Aluminium is much used for various utensils in place of enamel or other metals : colanders, strainers, pudding-basins, etc., as well as spoons and forks are all obtainable. It is clean, light, easily washed,

and is very popular; as the handles become very hot in use, some non-conducting material wrapped round them is an advantage.

Tin is an expensive metal; it is absolutely harmless to food, and does not tarnish, hence its use for lining iron and copper vessels. "Tins" and "tin" kettles are really thin iron coated with tin; the only real tin articles are those made of block tin, which is used for some cooking utensils such as meat tins, the trays below gas ovens, bread and cake tins (for baking), and fish kettles and steamers. A good quality in goods of this kind should be obtained, as inferior ones may not be well put together. Tin goods wear well, and often older utensils, especially bread and cake tins, give better results than new ones.

Brass. Good brass of best quality is composed of three parts of copper and one of zinc. The proportion of zinc rises in inferior qualities and, occasionally, lead may be added. Brass is widely used for ornaments, etc., but as it tarnishes very readily and is extremely difficult to keep bright, it can well be replaced by material requiring less labour spent on it, or can be covered with lacquer (spirit varnish) to preserve it. It is sometimes used for preserving pans, but they must be well cleaned before and after use, owing to the risk of verdigris.

Britannia Metal. This is made of lead, tin, and antimony in varying proportions, and is employed very largely for kitchen spoons and forks and for imitation silver ware. Being white all through, it does not tarnish or turn black with wear, and is very suitable for kitchen use.

Zinc and Galvanized Iron. Pure zinc alone is not used for making articles, as it is too soft; but as it does not tarnish or corrode in moist air, it is used to cover iron. This is done by dipping the clean iron vessels in a bath of molten zinc, and then rolling, the zinc-coated iron so produced being known as galvanized iron. Zinc forms poisonous salts with acids and alkalis, hence it is not used for cooking utensils, but it is extensively employed for baths, bowls, buckets, dustbins, etc. Occasionally, it is used for covering tables, especially as a stand for a gas ring or small stove. It is fairly easy to clean, but should not be scrubbed with coarse abrasives, owing to its softness, and the risk of wearing down to the iron, when rusting will begin and rapidly spread.

WOODEN KITCHEN EQUIPMENT. White wood is used for all wooden kitchen utensils. It should be well seasoned and well put together, otherwise it will warp and split in use.

Pastry Boards, usually of deal, should be made in one piece; this is reinforced by wooden cross-pieces dovetailed on at the ends. Boards should be perfectly flat and smooth, free from flaws and knots in the wood. They should be adequate in size to give room for rolling out fairly large pieces of pastry.

They should be treated with great care; scraping with a sharp

knife and scrubbing too hard with a sharp abrasive will roughen the surface, and spoil pastry rolled on it. Drying and storing too near heat will cause the boards to warp.

Rolling Pins are generally made of some hard wood such as beech, elm, or oak, and should be straight, heavy, and smooth. They are obtainable in various lengths. Occasionally, glass and porcelain ones are seen ; they are very clean and smooth, but liable to get broken, though if treated with care will last for years, and are, on the whole, better than wooden ones.

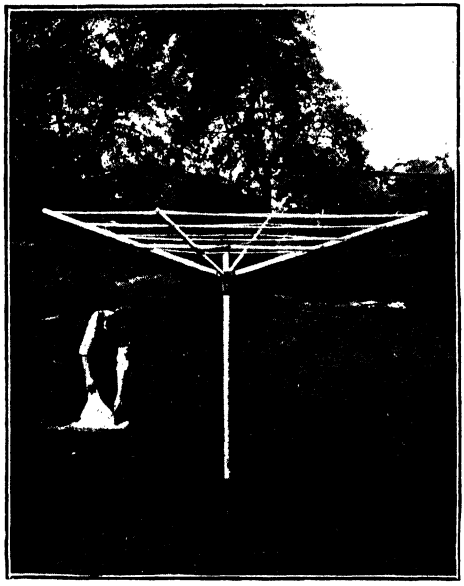


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FIG. 49*a*.—A USEFUL CLOTHES DRIER, WHICH IS PORTABLE AND COLLAPSIBLE.
It fits into a socket into the ground.

Chopping Boards are best if made in one piece, about 1 or 1½ in. thick, and smaller and heavier than pastry boards. They must be perfectly flat, and they should be free from knots and cracks, but generally it is impossible to keep them as smooth as pastry boards. They must be washed immediately after use to prevent stains and odours clinging to them.

Sieves. These are of wire or hair, in various degrees of fineness. The hair sieves are finer than metal ones, but these may also be obtained in a small mesh. The metal used is copper, tinned iron wire, or brass ; the first is the most expensive, and should be kept very clean. The " drum," whether of wire or hair, should be taut

and well fastened through the wooden frame, which is usually of oak or beech.

Spoons. For cooking, different kinds of spoons are necessary, especially wooden ones for stirring; those made round or oval without a point are perhaps best, though the pointed ones get into the corners. Large-sized metal spoons for basting, preferably

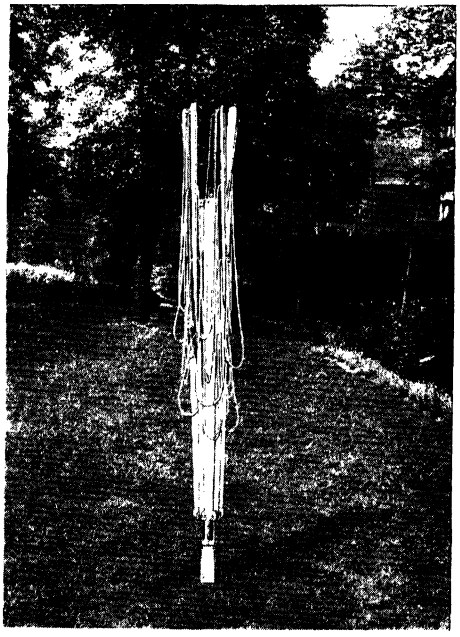

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FIG. 49*b*.—THE CLOTHES DRIER CLOSED, READY TO TAKE IN.

enamelled, are useful, and one graduated to show liquid measurements from a teaspoonful to a tablespoonful are invaluable, and save much guesswork.

Butter Pats, or Scotch hands, are useful for making butter pats of fancy shapes. They are generally of a hard wood, such as boxwood, and are grooved on the inner sides.

Plate Racks are obtainable in various patterns. Wooden grids are preferable to metal ones; racks should be smooth, strongly constructed, and be capable of taking large, medium, and small plates and saucers as well as small and medium dishes.

Chairs and Tables should be strong and well made; the tables

should be of smooth, well-seasoned deal, fitted with drawers, and of a comfortable height.

Bread Boards are preferable to bowls for a loaf, though for cut bread or rolls, the bowls are attractive. A board should be fairly heavy and flat, with a deep depression round the rim to catch crumbs. Very frequently, silver salvers have wooden centres, which are easily removed for washing. Bread should always be cut on a board, not on a plate ; a useful board is a square piece of natural oak, scrubbed very hard to bring up the grain. It is attractive and simple.

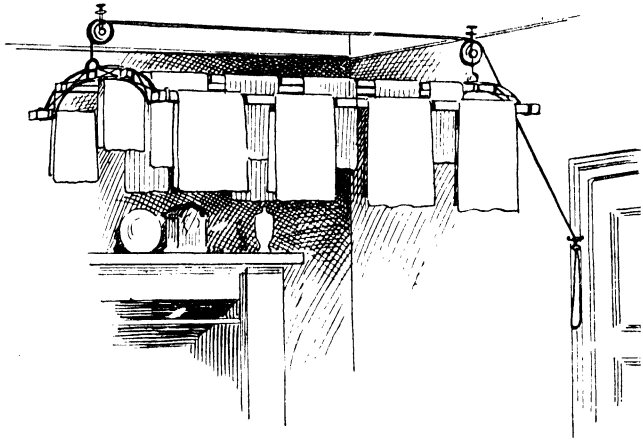


FIG. 49*c*.—A CONVENIENT DRIER FOR ATTACHING TO THE KITCHEN CEILING.
Worked by a pulley from one end.

A Clothes Drier may take the form of a clothes-horse, which is useful for airing or drying clothes before a fire or round the stove , or it may be a drying rack worked by a pulley from the ceiling. One modern drier looks rather like the spokes of a large umbrella in wood, which can be folded up when not required. (Figs. 49 *a* and *b*.) The clothes-horse gets in the way, and articles hung on it may get soiled if the kitchen is being used. Also, they must be turned to get evenly dry, and they run a risk of being scorched. A horse is, however, very useful for kitchen towels and small things requiring airing or drying. Clothes driers suspended from the ceiling keep the articles out of the way of dirt, and they are constantly surrounded by the warmest air at the top of the room, and therefore dry and air much more quickly. Several designs are on the market ; those which are worked from one end only are the most convenient. (Fig. 49*c*.) A small drier for a few dusters and

towels, which may be fixed near the stove or in some other warm corner, consists of a little framework, with four or six radiating arms, which may be raised or extended when required, and at other times lie flat against the wall.

ODDMENTS. Besides the equipment already mentioned, there are several small articles which should be possessed by every housewife for use in the kitchen, as these save labour and time in one way or another.

A Mincing Machine is invaluable, especially if fitted with several cutters of different sizes, and adapted for cutting anything from nuts to meat, in any grade of fineness desired. A separate nut-grinding machine may be used if desired. Similar machines are also obtainable for cutting vegetables into fancy shapes. Where electricity is cheap, and in large establishments, they may be run by a small motor and thus save the usual hand labour. A mincing machine should be strong and well made. It is usually of heavily-tinned iron, and fastens with a thumb-screw to the table ; if possible, it should have a special place for its use which has a piece of extra hard wood to take the screws, as these are apt to mark a soft deal very badly. Mincing machines should always be fixed on to something rather solid, as a small or light table moves sometimes with the strain. When not in use, mincing machines should be kept in a box or drawer, with all the pieces separate.

Egg Beaters do their work in less than half the time taken by a fork, and more thoroughly. Those worked with a wheel which revolves circular beaters are the strongest and quickest, and wear for years. They are obtainable in several sizes, from light ones to ones heavy enough to beat batter. They may also be used for whipping whites of eggs and cream. Other forms consist of hoops of wire firmly fixed to a metal handle and bound with metal. These are useful, in the stronger forms, for beating cake mixtures.

Potato Mashers for making " wormed " potatoes are invaluable. They are of metal, well-made and strong, and obtainable in various shapes and sizes.

Pastry Cutters of different sizes, and with straight and fluted edges, should be at hand.

Apple Corers for removing the core of whole apples are useful, and more effectual than a knife.

Vegetable Parers, pastry brushes, strainer spoons for lifting vegetables, etc., from the pan, are all necessary adjuncts, together with a *flour dredger* and *sugar castor*. The best qualities obtainable should be purchased for lasting wear.

CHAPTER VIII

CLEANING EQUIPMENT

BROOMS AND BRUSHES. The materials used for household brushes are bristle, hair, fibre, bass, or split whalebone, and the heads are made in one of two ways—

(1) The hair or other material is tufted, usually tied with wire, and fixed into the stock (i.e. wooden part) with pitch or glue. The stock, which is one solid piece, is varnished or painted, or sometimes left plain. This method is generally used for brushes which are intended for dry use only, as the glue or pitch would not hold if wetted frequently.

(2) The second method is to loop the tufts of material, push the loops through holes in the stock, and then fasten them by wire through the loops. The wires are then hidden by another piece of wood, nailed on and varnished or painted. The better kinds of shoe and blacklead brushes, and the better class of brushes intended for use with water, are made in this way.

Bristle is used for high-class toilet and paint brushes, and is provided by the Russian boar.

Hair. Horse-hair, generally the tail hair, is used for sweeping brooms and short-handled brushes. There should be a good spread in the sweeping brooms, and the handle should be fixed at a convenient angle for use. If a head with two positions for the handle can be obtained, it allows for more even wear on the hair. These brooms and brushes are by far the best and most satisfactory, and though rather expensive, as good a quality as possible should be afforded. *Goat-hair* is used for high-class dusting and babies' brushes.

Fibre. Fibre comes from an American grass, and is soft or hard.

Soft Fibre is used as a cheap substitute for hair brooms, but it does not wear as long. It is, however, useful for rough work.

Stiff Fibre is used for carpet brooms and whisks, and is generally long, and yellow in colour. Such brooms were always used for sweeping carpets until the advent of the vacuum cleaner, but they are apt to spoil the pile unless carefully used, especially cut pile, and they also raise a great deal of dust. In a modern household, this broom would be used only for kitchen carpets or rugs, if at all, the other carpets being cleaned by a vacuum cleaner. Short-handled brushes of stiff fibre are necessary for mattresses and stair carpets.

Bass is derived from a stiff grass found in the undergrowth of African and South American forests. It is used for sink, saucepan, scrubbing, lavatory, and yard brushes. A good stiff quality should be chosen.

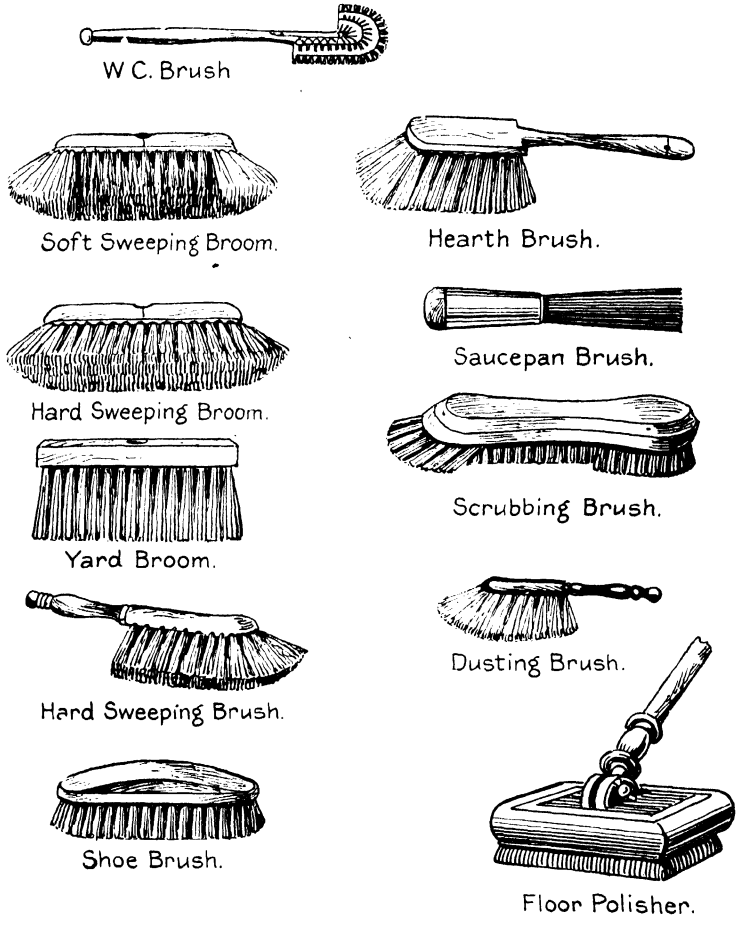


FIG. 50.—HOUSEHOLD BRUSHES.

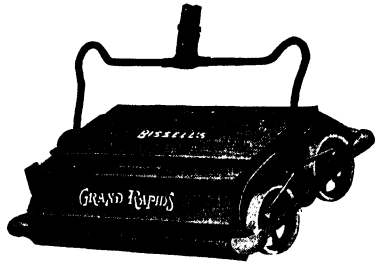
Scrubbing Brushes are of various shapes, but the best for general use has a pointed " wing " for getting into corners. The wooden stock should be shaped to the hand for greater ease in use. The best scrubbing brushes are of African bass ; cheaper varieties and cheap nail brushes are made from cocoa or Tula fibre.

Whalebone. This, when split, is used for flue brushes, twisted into a strong wire handle, which should be long and flexible. There are now on the market all kinds of household brooms and brushes, claimed to be very durable, and equal to bristle and other brushes.

Hearth, Blacklead, and Shoe Brushes of good quality are of horsehair, of varying lengths and degrees of softness.

Hearth Brushes should be of good quality, as they have a considerable amount of hard wear. They may have flat backs, for hard use, or be mounted on long handles to be kept in the sitting-room.

Blacklead and Shoe Brushes are sold in sets of three, or they may be bought separately. The application brush is not absolutely necessary, as a rag will take its place equally well, and one other brush only need be used. If more than one is available, each should be clearly labelled. With careful use, these brushes should not get clogged, or require frequent washing. They should be kept in a box.



By kind permission of *Bissell Dept.*

FIG. 51.—INDISPENSABLE TO EVERY HOUSEHOLD.

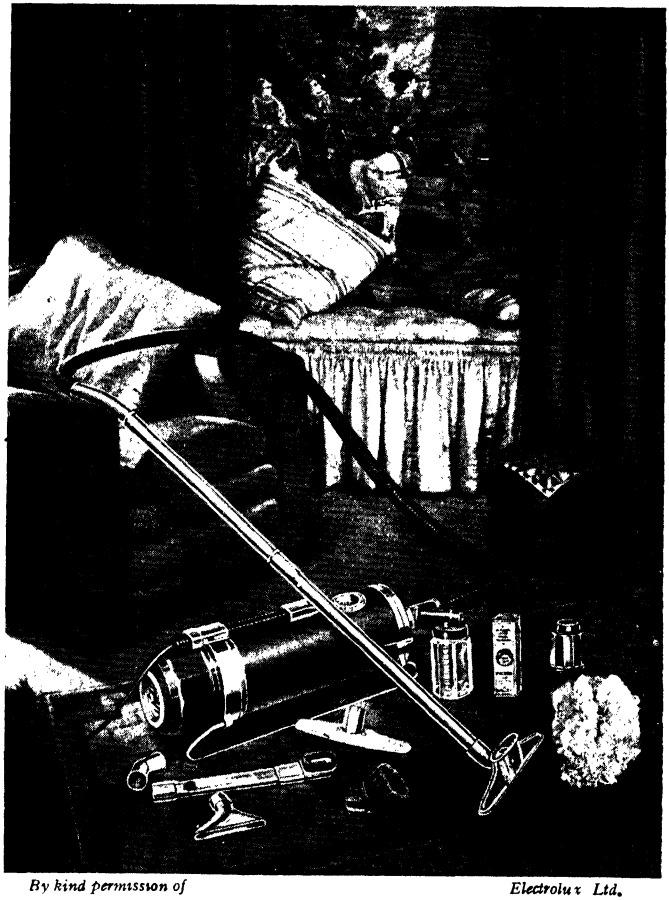
Silver-cleaning Brushes are of good quality white bristle, wired in; they must be stiff enough to get into crevices but not hard enough to scratch. They are obtainable in various patterns, and, though rather expensive, are a great help in cleaning engraved or filigree work.

A Polishing Brush for oiled floors, made of stiff bristles, and weighted, is extremely useful where there is much waxed floor space. The wax polish is applied by a cloth tied over the brush, which should never be allowed to get clogged with the polish.

Storage of Brushes. Sweeping brooms and short brushes should be kept hung up, the long ones by the head, short ones by a string tied through or round the handle, either in a cupboard or on hooks on the wall. A cupboard is preferable, as the brushes are then kept free from dust. Deal racks may be obtained, but it is a simple matter to fix a piece of boarding, with long nails hammered in at such a distance from each other that the handle just goes between two. The broom should be put in so that the head rests on the nails, with the bristles away from the wall. A broom should never rest on its bristles, and these should be cleaned from any fluff or dust before the broom is put away.

Carpet Sweepers. A good carpet sweeper is essential in every household. It takes up all surface dust, threads and bits, but in itself is not sufficient to keep a carpet perfectly clean. The best makes have good bristle brushes, removable for cleaning;

protected corners, with rubber pads preventing damage to furniture; strong springs keeping the dust boxes shut; and the handles on ball bearings. The brushes must be kept free from hair, threads, and dust. When worn out they can be renewed.



By kind permission of *Electrolux Ltd.*

FIG. 52*a*.—A POWERFUL ELECTRIC VACUUM CLEANER, which has an enclosed dust bag and is very light and easy to work.

In using a carpet sweeper, care must be taken to see that it is empty of dust before beginning to use it. If allowed to get too full, it will spill some of the contained dust on to the floor. It should always be emptied immediately after use. (Fig. 51.)

VACUUM CLEANERS. The vacuum cleaner is perhaps the most efficient labour-saving device ever introduced into the home. It can be obtained at almost any price, from a small one for light carpets and rugs, to powerful electric ones for thick carpeting and large buildings. However small the household, investment in a vacuum cleaner is decidedly justifiable, since it cleans thoroughly, with no dust, and with little trouble. Also, carpets are not worn out by a cleaner as they are by an ordinary broom ; with a vacuum cleaner all the dust is sucked up by a current of air, the pile being left intact ; while a broom sweeps up some of the pile and a little of the dust at every operation. Thus, carpets are worn out much more quickly by sweeping in the old way. Carpets cleaned with a vacuum, even a small hand one, are cleaned right through ; consequently there is less wear from contained dust, the treading and grinding of which into the fabric of carpets is a great factor in wearing them out.

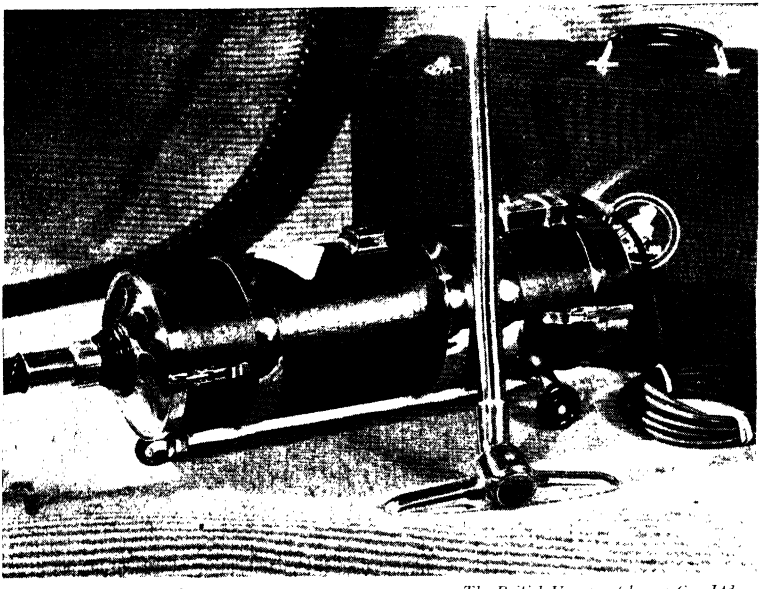
The vacuum cleaner works by drawing a strong current of air through the carpet from below, which automatically carries dust and dirt with it. The method of producing this current varies with the kind of machine. Hand machines are generally of the bellows type, and, by creating a vacuum, suck up air and dust through the flexible tube. Electric cleaners create the vacuum by a fan revolving at high speed. In all of them the dust and dirt are received into a closed receptacle, which can be taken away for emptying.

By kind permission of Hoover, Ltd.

FIG. 52*b*.—A POWERFUL ELECTRIC VACUUM CLEANER, which has a rapidly revolving brush in addition to the vacuum.

The hand vacuum cleaners are manageable by one person, but for those requiring constant pumping it is much better to have two ; where this is impossible another kind should be chosen. The electric types can be worked by one person quite easily, as the power is supplied by the electric current ; they are more expensive than hand-power ones, but the greater efficiency more than counterbalances this. There is an excellent electric cleaner, with an enclosed bag and a powerful suction, which is most handy and efficient for all kinds of cleaning, and being in a small compass is very easily managed. (Figs. 52*a*, *b*, *c*, and *d*.)

A good cleaner is generally fitted with extension tubing and nozzles of different kinds ; for ordinary use a long flat nozzle is fitted ; one with a brush is supplied for upholstery, mattresses, etc.,

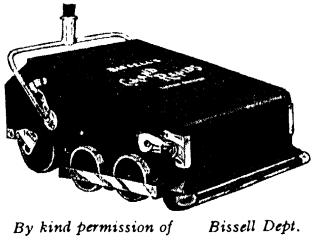


By kind permission of *The British Vacuum Cleaner Co., Ltd.*

FIG. 52*c*.—"GOBLIN" ELECTRIC CLEANER.

By kind permission of *Whirlwind, Ltd.*

FIG. 52*d*.—A LIGHT HAND-WORKED VACUUM CLEANER SUITABLE FOR DAILY WORK.



By kind permission of *Bissell Dept.*

FIG. 53.—COMBINED SWEEPER AND VACUUM CLEANER, each of which can be used independently.

and a small nozzle for corners. A disadvantage of all vacuum cleaners is the fact that threads and hairs caught in pile resist the sucking action, but, if after going over the carpet to remove dust, a carpet sweeper is run over it, it will remove these. There is on the market a combined sweeper and vacuum cleaner, which can be used together or separately, as desired. (Fig. 53.)

For those who do not care to purchase outright, it is possible to hire periodically, or to have the rooms cleaned at intervals by a company, who clean them by a vacuum cleaner driven by a motor outside the house.

A great deal of time and trouble is saved by the use of the

FIG. 54*a*.—A POLISHING MOP, EASILY REMOVED FOR WASHING.

vacuum cleaner. No furniture or furnishings need be turned out, and very little disturbed ; curtains and hangings can be cleaned in their ordinary positions as well as chairs and other upholstered furniture. It is only necessary to examine the contents of the dust-bag to realize how much has been removed. Needless to say, the terrors of spring-cleaning are very materially reduced, as there is very little contained dust to be removed from carpets kept clean regularly by the vacuum.

It is time that the prejudice still existing in some quarters against vacuum cleaners, because they do not make a dust, and cannot therefore be seen working, should be finally overcome. Once the old habits have been broken, and the new way adopted, no one would willingly return to the broom and dustpan for sweeping. Like everything else, the simplest cleaner must be studied and understood before it can be appreciated, and workers who object to its use should be shown clearly and unmistakably its advantages over old methods, and encouraged to use it.

Every cleaner should be emptied after use. If allowed to accumulate, the dust frequently hampers the action, and makes the work much harder, especially in hand machines.

MOPS. A labour-saving and hygienic device every household should have is one of the *dustless mops* now on the market. (Figs.

54*a*, *b*, and *c*.) These are made of twisted yarn, fixed to a steel frame, and impregnated with an oil which causes all dust to cling, instead of being merely disturbed. When it is used on polished floors and surrounds, all dust is removed, and a polished surface left. A stained or linoleum-covered floor can therefore be quickly and hygienically dusted; it is improved, however, by going over it again with a dry duster or mop, which makes the polish more permanent. The mops can be purchased either round or triangular in shape, the latter going into corners more easily. After use they should be well shaken out of doors or on to a piece of paper, to free them from dust. They can be washed and re-oiled, according to

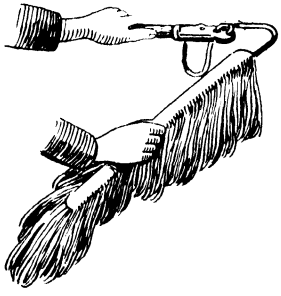


FIG. 54*b*.—SHOWING METHOD OF REMOVING MOP.

FIG. 54*c*.—A POLISHING MOP.
The angles allowing access to corners.

the directions given with the tin in which they are sold. The handle is generally fixed on to a movable hinge, allowing greater freedom. It is not necessary to remove it every time, but the mop should be stood in its tin when not in use. Care must be taken in dusting surrounds not to touch the edges of the carpet, as this will cause a black, greasy mark. The carpet should be turned up when the mop is being used. Especial care is necessary with stairs, as the carpets here are fixed. An excellent dry polishing mop can be made by well padding an old hair broom with pieces of old blanket well tacked on.

Floor Mops. Mop heads of twisted string or soft yarn are very cheap, and should be used in every household for washing over the stone or tiled floors of hall or scullery. They are made to fasten on to a head with two iron catches, which are hammered down; they wear excellently, and can be removed, for renewal, by prising up the catches. They save much time, hard work, and fatigue, especially if used in conjunction with a special pail provided with a sort of colander which wrings out the excess water. This saves using the hands, and, of course, much hotter water can be used. The mop wrings very dry, and wipes up the floor as well as or better

than by hand. After use, the mop should be well rinsed in plenty of water, wrung out, and put to dry in a current of air ; it should be kept upside down when not in use. A floor can be cleaned quite satisfactorily in half the time that would be taken to do it by hand. One patent device has a scrubbing-brush attached, saving the arduous toil of scrubbing on hands and knees. There is also a " house-flannel " mop, which can be wrung out tightly without touching by hand. (Figs. 55*a* and *b*.)

Washing-up Mops are a convenience, and prevent the hands being put into water. They are quite cheap, and can be kept very sweet and clean by rinsing in hot water and drying in a current of air after use.

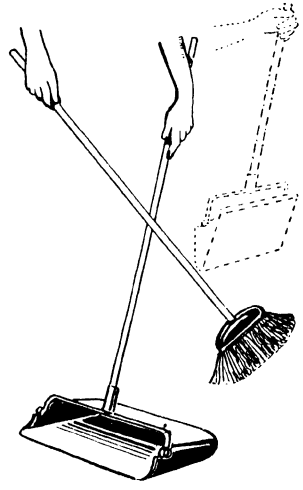


FIG. 54*d*.—LONG HANDLES TO THE BRUSH AND DUSTPAN FACILITATE THEIR USE, AND THE PAN TIPS UP FOR CARRYING.

DUSTERS. When starting house, a good supply of dusters is necessary, but afterwards any old material will cut up into useful dusters. Plenty are necessary, and dirty dusters should never be used. They may be used dry, when they tend to scatter dust, instead of gathering it ; or slightly damped with water or with an oil similar to that put on to the dusting mops. This will gather up dust, and prevent its flying about ; but generally it must be followed by rubbing with a dry duster to restore the polish. A cloth leaving no lint makes the best duster. When dry dusting, shake the cloth well outside at frequent intervals, and wash and dry after use. When using a duster of any sort, care should be taken to move tables and other articles away from the walls or a dirty streak will be formed in time.

LEATHERS. Chamois leathers are most useful for various purposes. They are not usually genuine chamois, but are derived from the sheep and goat. A good skin, fairly thick, without thin places, is rather expensive, but if it can be afforded it is invaluable for polishing silver, for which purpose it should be strictly reserved. Cheaper skins are excellent for windows and paint work, as they leave no lint. Leathers require great care in washing in order to keep them soft and pliable ; if allowed to become hard they are useless.

A substitute for chamois, and less expensive, is selvyt cloth, which is soft and easily washable, and leaves no lint.

LAUNDRY EQUIPMENT. If washing is done at home to any extent, there are several devices whereby the labour of it can be reduced. The usual fire-heated boiler can be replaced by a gas-heated one, with a flue that takes off steam. These are provided with a tap for emptying, and are more useful if there is some means of filling them without having to carry water. They are much

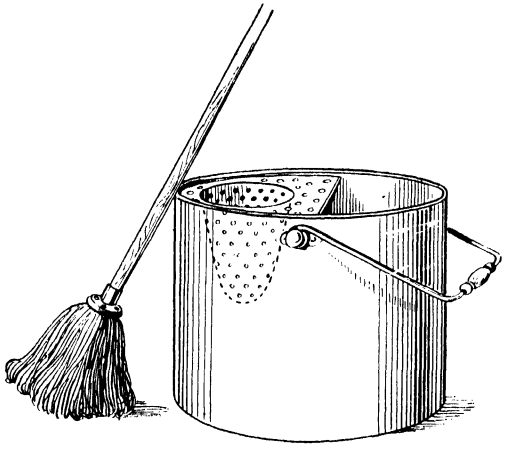


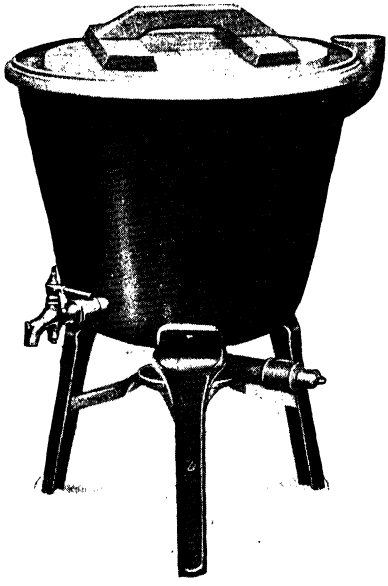
FIG. 55*a*.—FLOOR MOP, AND PAIL WITH A WRINGER, allowing hot or boiling water to be used.

FIG. 55*b*.—COMBINED MOP AND SCRUBBING BRUSH, WITH A WRINGER FOR THE MOP.

quicker and easier to manage than fire-boilers, as no attention is required for stoking, and the gas flame can be regulated to suit any requirement. Care must be taken, however, to see that there is water in the boiler before lighting the gas, and also that the gas is turned off before emptying the water. (Fig. 56.)

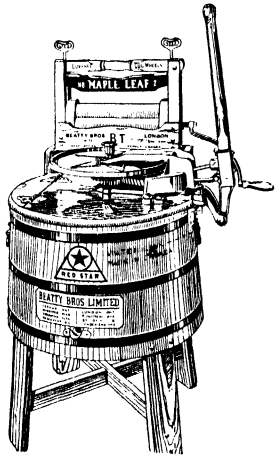
Various *Washing Machines* are obtainable, worked by hand, gas, or electricity, and of various designs. Some clean the clothes by

a peg revolving in alternate directions, like a "dolly"; others rotate them in a cylinder against baffle plates, which gently beat out the dirt. Still others force water and steam through them by a kind of suction, carrying the dirt with it. The choice of method depends on personal inclination, and on available funds. They are excellent for washing sheets, tablecloths, table napkins, pillow and bolster cases, towels, etc., and for heavy articles.



By kind permission of W. Sugg & Co., Ltd.

FIG. 56.—A GAS-HEATED COPPER.



By kind permission of Beatty, Bros.

FIG. 57.—A CLOTHES WASHER WORKED BY HAND.

The linen is agitated by a dolly in this machine, but there are various other types, gas, electricity, or hand.

Certainly much of the drudgery is taken out of home laundering by these machines, especially when they are fitted also with a wringer. If this is made to work in either direction it is more useful. These washers use less soap and powder than is required in hand washing, and once the initial cost has been recovered, they cost comparatively little to run, and are certainly cheaper than sending laundry out. (Figs. 57 and 58.)

If the cost of a machine cannot be afforded, good solid wash-tubs, which are generally of oak, are necessary. A wringer should be fitted to the side, which will save much hand-wringing. The tub should be stood on a table, or on a special frame with legs made for it. Another tub, or galvanized iron receptacle, as well as one or two enamel bowls, are necessary; a rubbing board is useful but

wears out the clothes. A soft brush helps in removing obstinate marks.

The Mangle. This is useful where there is much washing done at home, and may be bought in various sizes; where both wringer and mangle cannot be afforded, the processes of wringing and mangling are usually performed on the mangle; it is essential to

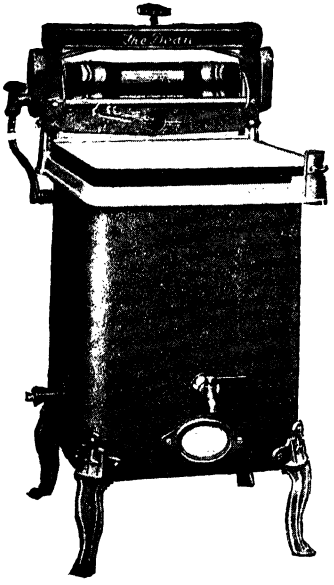


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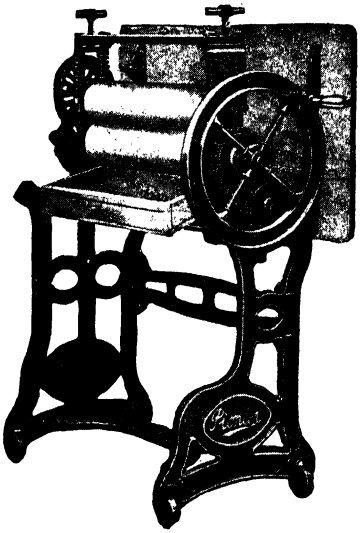
FIG. 58.—GAS WASHING MACHINE.

The wringer folds beneath enamel top when not required.



By kind permission of Whittaker Bros.

FIG. 59.—A COMBINED MANGLE AND TABLE OF UP-TO-DATE CONSTRUCTION.

rinse and dry the rollers after using or they will become warped and will not mangle efficiently. The tension should be quite slack when the mangle is not in use. Where space is limited, a mangle which can be covered and used as a table is useful. (Fig. 59.)

Washing-up Machines are not necessary unless there is a considerable amount to be done. Great care is required in selection, in order to make sure of getting a really useful one that does the work properly and in less time than by hand, otherwise they are a useless investment.

Irons. These may be ordinary flat-irons, heated on the gas-ring or range, or internally heated by gas or electricity. Both the latter are clean and economical in use, and do the work quicker and more

easily than flat-irons. For ordinary household use choose irons about 5 lb. or 6 lb. in weight, as more pressure is required in use if they are too light.

Using Washing Machines. Heat the water to boiling point before adding soap. Pure laundry soap free from soda, powders, or rapid cleansers produces the best results—washing powders should not be used. Add it grated to the water after turning off the heat and whisk into a strong lather. Put in the white things, being careful not to overcrowd the copper. Work a hand washer briskly for four or five minutes, or run an electric one according to directions. Wring out the articles very thoroughly, and follow on in the usual order of washing. More soap or clean water may be added as required. It is important to keep up a good lather for each batch of clothes, and to wring out as much of the soapy water as possible. When all washing is completed, run off the dirty water, and refill the copper, which may be heated or not, as desired.

Rinse a few things at a time till all are done, and repeat if necessary. A second tub for blueing is useful, and it can be arranged so that the wringer may still be used. After use, the copper and wringer must be well washed with hot water, rinsed and dried. Finish by well rubbing with a dry cloth, to remove all traces of soap; dry wringer and loosen tension, and leave the washer open till quite dry. If preferred, cottons and linens may be done separately from woollens and silks, etc., as the latter do not require the water heated to boiling point before use.

The usual boiling of cotton and linen is unnecessary in these machines, as the combination of soap, great heat, and rapid movement quickly removes all grease together with the dirt. Extra soiled parts such as collars and cuffs can be easily cleaned by rubbing on soap before washing and giving them longer in the washer. The same method will remove tea stains.

CHAPTER IX

THE NATURE OF CLEANING

DIRT AND DUST. The dictionary defines cleaning as "the removal of all dust, dirt, and foreign matter," and the methods adopted for removal will depend on the nature and composition of the dirt.

DUST. By dust is meant the loose particles deposited from the air. This dust is complex in character, and its constituents are both inorganic and organic matter.

The *inorganic*, or mineral, part of dust consists of finely-powdered earth, stone, rocks, sand, etc., derived from the weathering of rocks, from the gradual grinding-up by traffic of road metal, and from the drying of the soil and the dispersal of the loose particles by wind. Soot and ash, from the burning of combustible materials, are also present. The quantity and composition of mineral matter varies with the locality; the proportion of soot, for instance, is much greater in towns than in the country; while chalk predominates in some districts, and sand in others.

The *organic* matter is of animal or vegetable origin. Animal matter consists of minute particles breathed out by all animals, of microscopic scraps of hair, skin, and dried excrement. Pollen, fibres from clothes, etc., and living organisms known as yeasts, moulds, and bacteria constitute the vegetable part of dust. These last are in great numbers in the air, and though most of them are harmless, it is undesirable to allow them to accumulate. They are all capable of taking on highly-resistant forms called spores, which can withstand prolonged unfavourable conditions, but develop completely when a suitable opportunity occurs. These living organisms are the most dangerous part of dust, since among them there may be disease organisms, only awaiting favourable opportunity to develop and spread.

The *yeasts* are round or oval cells, microscopic but comparatively large in size. They abound in air, and, though they are of various kinds, they are, generally, all called wild yeasts. These cause fermentation of all sugary liquids and semi-solids, such as jams, jellies, etc., converting the sugar into alcohol and carbon dioxide, and completely altering the taste of the article attacked. They are more or less harmless, but nevertheless undesirable.

The *moulds* are known to all as the green, blue, or white growths on cheese, bread, leather, etc. Their spores also abound in the air, and grow rapidly on a suitable medium, e.g. organic matter or acid food materials; hence their frequent occurrence on pickles and

fruits. They are generally on the surface, and can be scraped off, but, though they are harmless, food attacked by mould is not generally regarded as fit for human consumption, except in the case of certain cheeses. They do not thrive on alkaline substances.

Bacteria are living organisms, smaller than the spores of moulds, and reproducing with immense rapidity. They are very various in kind, and the majority, though abundant everywhere, are not harmful. Certain bacterial diseases, however, are air-borne; that is, the infective material may float about in the air—hence the danger of allowing the accumulation of dust. The organic matter given off by animals may be infected with disease organisms, which can lie dormant in neglected corners for long periods, and then be capable of causing disease. Many of the organisms are responsible for causing decay and putrefaction in foodstuffs, especially in meats and alkaline substances. Generally speaking, they cannot grow in the presence of acid.

Characteristics of Dust. (*a*) Dust is light but is heavier than air. It may be seen floating about in the air only when a beam of light, striking on the particles, shows them up; but that it *is* there is evident from the fact that it settles readily on any surface. It is, though light enough to float for a very long time, heavier than air; and if a room could be sealed up to prevent any movement of air, all the dust would eventually settle. Owing to this fact, it is possible to remove dust; but, because of its lightness, it is so easily disturbed by wind or currents of air, that the process of removal must be carefully carried out to prevent undue scattering. It is not possible by ordinary means to remove all dust from air for this reason.

(*b*) Dust will adhere to any damp surface. If this is favourable, the yeasts, moulds, or bacteria present will develop, according to the medium. Hence the importance of keeping larders and other places for storing food very clean and free from dust, and of keeping all food covered, especially milk, etc.

(*c*) Dust is entangled by grease, forming a film of mixed dust and greasy matter over the article, which adds considerably to the difficulty of removal. The grease may surround dust particles originating from factories, workshops, etc., and settle as greasy dust from the air; or it may become deposited on articles from handling or wearing, when any falling dust is caught and held by it.

(*d*) Dust is also caught and held by rough surfaces much more than by smooth ones, and is more difficult to move.

DIRT. Dirt is dust held firmly by moisture, grease, or rough surfaces. Such "fixed dust" cannot be moved by currents of air, and its presence causes marks not always removable by the methods used for dust alone.

FOREIGN MATTER. Under this heading is included all

matter not composed of dust held by grease or moisture, but which can be regarded as spoiling articles upon which it occurs. In addition to the ordinary dust and grease marks, many metals form chemical compounds with the constituents of the air, or of food, causing tarnish and rust. These must be removed, not only because the appearance is unsightly, but because they may be actually dangerous, especially in cooking utensils. *Tarnishes* are generally oxides and sulphides of metals; and can be caused by air and moisture, heat, organic acids (from food, etc.), atmospheric gases, e.g. H_2S (sulphuretted hydrogen) and other sulphur compounds. On some substances the tarnish forms a protective film, preventing further oxidation; while in others, noticeably in iron rust, the top layers flake off, exposing new surfaces, which are rapidly attacked. Thus, iron may be completely disintegrated if rust, once started, is allowed to go on. Hence all ironware is coated with a protective paint or other covering, which must be kept intact. Metals tarnish only in the presence of moist air; in dry air they remain bright for a long time, and in moisture free from air tarnish does not occur. Metals should therefore be kept in warm, dry places, especially cooking utensils. Brightly polished surfaces tarnish less readily than dull ones. The tarnishes, being generally softer than the metal but insoluble in water, can be removed by friction; they are soluble in mineral acids, but these attack, and may destroy, the metals themselves.

Stains may be defined as any substance, other than dust and dirt, which spoils the appearance of material with which it comes accidentally in contact. Stains may be of (*a*) *animal origin:* stains of blood, animal fat, perspiration, etc.; (*b*) *vegetable origin:* grass, vegetable acids, tea, coffee, etc.; (*c*) *mineral origin:* ink, paint, iron-mould, etc.

REASONS FOR THE REMOVAL OF DUST. Although it is impossible to prevent the occurrence of dust in the house, much can be done to reduce it to a minimum. Other parts of this book have emphasized the importance of structure and furnishing in lessening accumulation and reducing work. The essential points are the avoidance of dust-traps of all kinds, and the provision of smooth surfaces to which the dust cannot readily cling. In houses where more modern furniture and up-to-date apparatus may be out of the question, these essential points can still be observed.

Dirt and dust, which here include all kinds of foreign matter also, are removed for the following reasons—

For the sake of appearance. Dusty furniture, dirty and stained materials and tarnished metals give an unkempt air to the most beautifully furnished house, besides being unpleasant to handle and to use.

For the sake of health. The unhygienic nature of dust has already been pointed out. In addition, the inhalation of dust-laden air

is injurious, and the using of unclean vessels for food may be positively dangerous.

Dust and dirt may have a destructive effect on materials. The wearing of carpets not kept clean throughout is hastened by the grinding and treading of grit into the pile, the fibres of which are cut by the sharp edges. It is also thought that dust and dirt, especially when mixed with grease, becoming ingrained into materials, enter into a kind of chemical combination with the fibres, making removal difficult, and in some cases weakening the fibre. When removed immediately little damage occurs, but neglect and excessive soiling almost invariably cause deterioration.

Principles of Removal and Disposal. The methods adopted for the removal of dust and dirt from materials and surfaces vary according to the nature of the articles and of the dirt to be removed, but in all cases the principles involved are the same. These are: (1) The dust must be removed as speedily and as completely as possible, in such a manner that it is not scattered to another part. It must also be immediately disposed of, when collected, in a sanitary manner, preferably by burning. (2) The appearance and fabric of the article cleaned should be uninjured by the methods adopted. Although this is a necessary aim in all cleaning, consideration for appearances may have to be set aside when cleanliness is unobtainable by ordinary methods. Extreme measures, however, are a last resource, and justifiable only in extreme cases.

THE REMOVAL OF LOOSE DUST. By this is meant the ordinary daily care and the removal of all dust not held by grease or moisture. The methods used fall into three groups—

Dispersal. That is, the loose dust is got rid of by beating, shaking or brushing, and there is no attempt to collect it. All such operations are best performed out of doors, in a wind which will carry away the dust. The worker should stand with the back to the wind to protect the face and clothing, as much as possible, from flying dust, and also in such a position that the dust is not carried back into the house.

Collection. (*a*) *Sweeping and dusting* is the commonest method of removing loose dust, and forms a great part of the daily care of the home. The method of sweeping a carpet is described fully under that heading, but the general procedure of all sweeping and dusting operations may be indicated. The sweeping may be done by a broom, and dust taken up in a dustpan, or by a carpet sweeper, which is, in effect, a combined brush and dustpan.

GENERAL PROCEDURE IN SWEEPING AND DUSTING. *Sweeping.* Work methodically; start at the highest point and work downwards, so that parts once cleaned are not made dusty again.

Scatter dust as little as possible; as draughts will prevent this, the door should be kept closed, and the window also if there is much wind blowing in.

Whether the dust should be swept towards the door, fireplace, or window is a matter of controversy; sweeping towards the window and fireplace is said to prevent scattering from draught; and, in the case of the fireplace, a good deal of flying dust is no doubt carried up the chimney by the up-draught. If sweeping is done towards the door, the draught under it will carry the dust either back into the room or into the outside passages.

Gather up the dust at frequent intervals, and burn it immediately.

The most effective stroke is a short, even one, delivered from behind the broom, but if this is jerky, the dust will tend to fly up too much. In removing dust from corners, the broom is used sideways, and the worker should avoid sweeping the dust towards herself.

Allow floating dust to settle before removing it with a duster.

A carpet sweeper requires experienced handling. A firm, moderately long stroke should be used rather than a short quick one, which is inclined to jerk out the dust instead of gathering it. If carefully used, a carpet sweeper will take up a certain amount of dust on linoleum or other uncarpeted floors; but this should be practised with discrimination. As the sweepers do not get into corners, or take up more than surface dust, some other means of cleaning should be used weekly, though for the daily care it is quite satisfactory.

Dusting. Two dusters, one in each hand, save time in dusting large surfaces such as doors, etc., where there is nothing to move. One may be used slightly damped with water or, for polishing wood, with furniture oil, which will cause the dust to cling and be removed more easily. The other duster should be dry, to remove all dampness, and to give a polish. If one duster only is used, it should be dry.

Clean dusters are essential; if the corners are folded, less dust will be flicked about.

Begin at the highest point, and work downwards.

Gather up the dust into the material, and shake frequently out of doors, taking care that the dust is not blown back into the house.

All polished surfaces are improved if rubbed well during the dusting process. This prevents the formation of a greasy film, leaves a surface to which dust clings less readily, and therefore makes washing, or polishing with a furniture cream, less frequently necessary.

For intricate work where a duster is ineffectual, such as carving, a soft brush can be used.

(*b*) *Collection of Dust by Suction* is a more advanced and hygienic method than sweeping. The construction of vacuum cleaners, and the principle upon which they work, has been already discussed. The directions given should be carefully observed, as the efficiency of the cleaner is, naturally, less if it is carelessly or incorrectly used.

The order of work with a vacuum cleaner is different from that where a broom is used, for the following reasons—

With a broom, a good deal of scattered dust is inevitable, however careful the worker may be. In the dusting *afterwards*, therefore, the amount sent on to carpets is negligible as compared with the amount left in them. With a vacuum cleaner, however, a far greater proportion of dust is removed; therefore it appears more logical to dust walls, furniture, etc., first, and then to gather up all the loose dust at one operation from the carpet and upholstery. All that is then necessary is to rub round the boards with a mop. This order of work is invariably practised in a certain house where a cleaner has been used for years, and always with the most satisfactory results.

A hand machine, used by one person only, is not generally powerful enough for a thorough weekly clean, and it is more economical to have a sweeper for daily work, and a more powerful vacuum cleaner, worked by two people, for the weekly cleaning. This difficulty, of course, does not arise where electricity can be used. It might be well to mention that, in the hand machines requiring the operation of a bellows by a backward and forward stroke, the movement should be powerful, even, complete, and not too fast; the bellows must be emptied or filled thoroughly at each stroke, or the draught created is not sufficiently powerful to take up the dust.

THE REMOVAL OF FIXED DIRT. As dirt is generally held on to materials by grease, the removal of this is the principle upon which cleaning methods are based, the particles of dirt themselves being automatically liberated, and carried away. The actual methods employed vary with the amount and nature of the dirt, and with the material to be cleaned. All loose dust having been removed by one of the methods given above, cleaning proceeds along one of the following lines—

Washing alone, i.e. with water, mixed with some grease remover such as soap, soda, or ammonia. This is the usual way of dealing with ordinary dirty materials of all sorts that are uninjured by water. Hot water alone will *melt* grease, and therefore facilitate its removal; and when there is only a small quantity of grease, it may be used without any other grease remover. It does not, however, either *dissolve* or *emulsify* it, and if there is more than a very small amount, the addition of a substance which will attack the grease itself is necessary. Both soap and soda act upon grease, and cause it to emulsify, i.e. to remain in a suspension in the water in a very finely divided condition, so preventing it from collecting at the top in a greasy layer. Neither of them *dissolve* grease, though they may, especially soda and ammonia, combine with it to a certain extent, forming soaps. As grease is set by cold water, this is not very effective, even in conjunction with soap or soda, for cleaning very dirty or greasy articles.

Washing as before, with the aid of a *scouring agent,* is necessary where the mere removal of grease is insufficient, the dirt being removed by mechanical scraping. The agents used vary from fine, soft powders like whiting, to hard, sharp particles such as sand, and are used according to the hardness of the material. This process is used largely on metals, but also on other substances where friction does not injure the surface.

Cleaning by Substances other than Water. (*a*) *Grease Solvents.* Where water cannot be used for fear of damaging the material, liquids which *dissolve* grease are often employed. These are benzine, petrol, etc., and in dissolving grease they carry the dirt with them. These methods constitute "dry cleaning," in which many liquids and mixtures are used. As most grease solvents are inflammable, great care should attend their use.

(*b*) *Grease Absorbers,* i.e. substances that very readily absorb grease, may also be used; such are chalk, magnesia, fuller's earth, etc. The dirt itself is not affected, but can often be removed, after the grease has gone, by brushing or rubbing.

The Removal of Tarnish. This is an essential part of the complete cleaning of metals, and the methods adopted must remove the covering of tarnish without damage to the metal itself. Tarnishes are soluble in acids, and are softer than the metal itself. They are therefore removable by friction. Cleaning methods are based on either or both of these characteristics.

The Mineral Acids (hydrochloric, sulphuric, and nitric acids) readily remove tarnish, but they also attack the material itself, sometimes destroying it with great rapidity, sometimes more slowly, but always surely, eating it away. As they are themselves poisonous and dangerous to use, and may form poisonous salts with metals, especially copper, they cannot be regarded as anything but undesirable cleaning agents. Dilute hydrochloric acid is sometimes used for removing tarnish from neglected metals; this should be regarded as an extreme measure, and great care exercised in the subsequent rinsing.

The Organic Acids are slower in their effect on the metal, but they are equally effective in removing tarnish; they are therefore less harmful to use for cleaning, but if allowed to remain on metals, they may form poisonous salts, and retarnishing takes place very quickly. The acids most likely to be used by the housewife are oxalic acid, vinegar (acetic acid) and lemon juice (citric acid). *Oxalic acid* being poisonous, requires caution in handling and extremely thorough rinsing; and it should *never* be used for cooking utensils. *Vinegar and lemon juice* remove tarnish from brass and copper, but unless very thorough rinsing follows, retarnishing will take place very rapidly. This method is not suitable for cooking vessels made of these metals, owing to the above-mentioned danger of poisonous compounds due to insufficient rinsing, which

may be dissolved in food cooked in them. Whenever they are used, complete and thorough rinsing should follow, when no such injurious compounds ought to form. Lemon juice is preferable to vinegar, as the latter forms the particularly poisonous salt verdigris (copper acetate) with copper.

The idea of what constitutes " complete and thorough rinsing " is, however, delightfully vague, and the operation is usually confined to a hasty swish round in a bowl of water, followed by drying. To remove every trace of acid, a thorough *washing* in hot water, containing a little soda, is necessary. This should be done immediately after cleaning, and on no account should the acid be allowed to dry or partially dry on. If this happens, undesirable effects will most certainly follow. Further rinse in running water, or in successive lots of water. If the final water is hot, drying is easier, but there is no other special advantage in using it. It should be pointed out that a large volume of water used once is less effective than several smaller volumes, or than running water. After rinsing, thorough drying and polishing with a cloth should result in perfectly clean metal.

Effect of Abrasives. An abrasive removes tarnish by purely mechanical means. The particles of a scouring agent rub off the film of tarnish when friction is applied, leaving the clean metal beneath. It is obvious that the abrasive for any particular metal should be carefully chosen, as there is a danger of rubbing off the surface layer of the metal as well as the tarnish, and of causing scratches. Therefore a soft metal like silver requires a fine, soft powder, while harder ones may be employed on the more resistant metals, such as steel. There is a considerable range of abrasives in all degrees of hardness, therefore there should be no difficulty in finding one suitable for any purpose.

Polishing of Metals. Besides the actual removal of tarnish, the production of a brilliant reflecting surface is an important part of the cleaning process. A polish is due to the reflection of light, in parallel rays, from a very smooth surface, which is produced on a metal by the friction of minute particles If these are large or too hard, scratches are produced, which interfere with the reflection of light and spoil the appearance, as well as injuring the metal. The more and harder rubbing given to metals, the better the polish produced. It is this, and not any chemical action, which produces the best polish. Hard rubbing after washing, with a cloth or leather, alone will bring up an excellent polish on silver.

A good polish is valuable for more than appearances' sake. It is less inclined to tarnish than a duller and therefore less smooth surface, and in the case of cooking utensils, heat is retained far longer than in dull ones, though the contents may take rather longer to get hot. This is because highly polished surfaces reflect heat as well as light more readily than dull ones, therefore heat

takes longer to get to the contents of a copper saucepan if it has a brightly polished exterior than if it were dull; but once the heat penetrates, it is retained longer. The practical application of this seems to be that the inside and outside of cookery utensils, generally speaking, should be kept brightly polished, but that the outside of the base in contact with the source of heat should be kept clean and free from tarnish, but not brightly polished.

To avoid misconception, let it be stated at once that no commercial polishes or acids may be used for polishing cooking utensils. Any suitable abrasive is quite sufficient, combined with rubbing.

Commercial Preparations. There are many of these on the market; they are quick in action and convenient to use, but more expensive than home-made cleaning agents. They generally consist of an organic acid, frequently oleic acid (an acid occurring in soft fats and olive oil), a fine abrasive, and something which will help to remove grease, such as ammonia, alcohol, or paraffin, or merely soap and water. No mineral acids should be present. In using, they should be applied sparingly, and well rubbed off before polishing. They are convenient and suitable for ornaments, etc., of metal, but should not be used for cooking vessels.

REMOVAL OF STAINS. The removal of stains from carpets is discussed under that heading, but the general method of dealing with stains may be summarized here.

Remove stain as soon as possible after its occurrence.

Consider the nature of the fabric and of the stain before applying the remedy.

Use simple methods first.

Work from outside edge of stain towards centre to prevent spreading, especially when dealing with grease stains.

Remember that several applications at intervals are more effective than a prolonged treatment.

CHAPTER X

CARE AND CLEANING OF WOOD

THE wood in the household may be classed as (*a*) plain, (*b*) finished.

(*a*) *PLAIN WOOD.* This is generally of deal (though other woods, such as elm, oak, beech, sycamore, are used for special articles), and is found principally in kitchen equipment, floors, and stairs. Plain wood articles are generally sent out with a smooth-planed finish, and methods of cleaning should be adopted which will preserve this as far as possible.

The points to be noticed in cleaning white woods are—

(1) *Avoidance of Roughening.* This is caused by using too hard a brush, which removes the softer parts and tears at the fibres of the harder grain. It is hastened also by using too hot water, which softens and swells the wood; by an abrasive which cuts the fibres; and by scrubbing across the grain. Soft woods roughen more easily than hard ones.

(2) *Avoidance of Discoloration.* Too hot water, the use of soda and other alkaline substances, excess of soap, and exposure to heat, all cause yellowing and discoloration. The use of cold water for rinsing helps to preserve the colour.

(3) *Avoidance of Warping.* Warping, or distortion, occurs in insufficiently seasoned wood, but it may also be caused in properly made articles by the excessive use of water, or if the article is left wet for any length of time. Subjection to great heat, such as very hot water, strong sun, or a hot fire, also causes warping. Wood once warped cannot be restored successfully to its original condition.

General Procedure for Cleaning White Wood. Remove all surface dust; pieces of food from pastry boards, etc., should be removed by gently scraping with a blunt instrument, preferably of wood. A knife should not be used, as this may cut or roughen the surface.

Use warm or cold water, a flannel, soft brush, and a little soap. Sand or scrubbing mixture can be used for hard woods, but not for deal.

Wash over a small portion of the article, then scrub the way of the grain, using soap sparingly.

Rinse well, and dry before going on to the next piece. Be careful to overlap, or dirty marks will show. When all is finished, dry in a current of air.

If much scrubbing is to be done, the water will require changing and, though the aim throughout is to keep the wood in good condition, thorough cleanliness is essential. Wood that has already become discoloured and in bad condition is more difficult to clean and requires harder scrubbing than smooth wood.

If necessary to scrub floors on hands and knees, use a kneeling pad to prevent injury to the knees. Have the light on the work, and avoid kneeling upon the part already washed.

(*b*) *FINISHED WOODS.* Wood used for furniture, etc., is generally finished in some way in order to preserve it and to beautify its appearance. Various finishes are used, and the method of cleaning depends on the particular kind used.

Painting, Enamelling, etc. White wood, and wood of no particular beauty in itself, is often painted, stained and polished, or enamelled.

Paint consists of three parts: (1) the pigment, or colouring matter, which is insoluble and in a finely-divided condition, and is of animal, vegetable, or mineral origin.

(2) The medium in which the pigment is conveyed, and which should "dry" when exposed to air, forming an elastic covering.

(3) A "drier" is added, which increases and hastens the drying properties of the oils used.

Pigments. Whitelead is the commonest ingredient of paint, especially white paint, as it has the power of covering a surface well, is opaque, and is very durable under ordinary atmospheric conditions; but it has a tendency to darken in some atmospheres owing to the formation of the dark sulphide of lead produced when acted upon by sulphuretted hydrogen (H_2S). It is often mixed with zinc oxide, a pigment which is not affected by H_2S, especially for outside work, and thus the darkening is less noticeable.

Coloured pigments are of various kinds, derived from mineral or vegetable sources. Black paints have pure carbon in some form, such as lamp-black, graphite, etc., as the colouring matter.

The media used are (1) linseed oil, which oxidizes very rapidly, forming a hard elastic film and used in the "raw" or in the "boiled" state. The latter term refers to oil which has been thickened by heating while a current of air is blown through it. This process increases its drying properties; (2) turpentine, a liquid obtained from the resinous exudate of a species of pine; added to it in small quantity it increases the drying, but if too much is used, drying is too rapid; (3) other drying oils, such as tung oil. Linseed oil or turpentine may be used, or in some cases a mixture, when diluting.

Paint is usually applied in several coats or layers, in order to provide a suitably thick covering to the wood. In cleaning, reagents that will remove or discolour the paint, and materials that will scratch it, must be avoided.

Staining and Polishing. This is a favourite method of treating white woods. The stains used are—

(*a*) Water stains, or (*b*) oil stains, and are generally for the purpose of imitating walnut, oak, mahogany, etc. They may or may not be combined with varnish.

(*a*) *Water Stains.* These are made of substances soluble in water. Permanganate of potassium is a common household stain, the brown coloration being due to the formation of a brown hydroxide of manganese when the solution is exposed to the air. Logwood chips, from the wood of an American tree, are also used for the same purpose; also indigo, turmeric, aloes, etc. Aniline dyes, e.g. Bismarck brown, are frequently employed. Water stains tend to raise the grain, and the colouring matter rubs off rather easily, but they are very useful where not too much hard wear is required.

(*b*) *Oil Stains.* These are more durable than water stains as a rule; they dry more slowly, but penetrate the wood better. The liquids used are turpentine, linseed oil, and colouring matter, e.g. burnt and raw sienna, burnt and raw umber, vandyke brown, etc.

Varnish is composed of resinous substances dissolved in a volatile solvent. On evaporating, this leaves the resin as a hard film. Varnishes may or may not be coloured, and are of two kinds.

(*a*) *Spirit Varnish,* in which the solvent is alcohol, or methylated spirit (methyl alcohol); or turpentine or benzine. The resin used is generally shellac, which is the secretion of the lac insect found upon the twigs of an Indian tree. The secretion is separated from the woody part and sold. It dissolves in methylated spirit, and is used largely in french polishing. Other resins are also used in varnishes and are exudations from certain species of pine trees and are very complex in character. Spirit varnishes are inclined to be brittle.

(*b*) *Oil Varnishes.* The resins are dissolved in a volatile solvent, e.g. alcohol, together with a drying oil (generally linseed) and a drier, as in paint. Turpentine is also added. These varnishes produce a harder and less brittle film than spirit varnishes. The resins used belong to the fossil resins, the chief ones being amber, copal, and animi.

Enamelling is frequently preferred to paint, as it is harder and more brilliant, with a smooth, shining surface. Enamels have the qualities of both paints and varnishes, as they are a mixture of pigments and resins, with turpentine. They are more durable and more easily cleaned than paint.

CLEANING OF PAINT, ENAMEL, ETC. Woodwork can be kept clean by the frequent removal of surface dust, and by preventing the formation of a grease film. Washing or cleaning should take place when dusting is inadequate, the frequency with which this is necessary depending on the locality and the use to

which the article is put. In cleaning varnished, painted, or enamelled surfaces, solvents that will attack the covering should not be used. Substances such as turpentine, entering into the composition of paints, will remove them, and alkaline solutions, e.g. washing soda, affect paint injuriously. Temporary hard water can be well boiled and cooled before use, and less soap is then necessary.

Paint (Light). Avoid alkalis, heat, friction, and much moisture; also solvents, which will dissolve it.

Protect surroundings as much as possible.

Wash, after dusting, with tepid soapy water applied with a napless cloth.

Rinse with clean tepid water; this washes off the soap more completely than cold, which is apt to leave the paint smeary. Dry well.

Only do a small portion at a time, so that soapy water is not left on longer than necessary. Before a large surface is begun, it should be wiped over with a cloth wrung out of clean tepid water. This prevents any drops of dirty soap adhering readily and making marks difficult to move.

Stains on White Paint can be removed with precipitated whitening, used on the washing cloth; "Zog," a commercial product, is also efficient. After using either, careful rinsing is essential, or a deposit of whitening will be left.

Dark Paint. Wash as above, using paraffin (1 tablespoon to ½ bucket of tepid water) in place of soap. This is a grease remover, and gives a good polish, but as it may remove a very slight film of the paint also, constant use may cause wearing away of the paint in time. Where paint is washed at infrequent intervals, this effect is so slight as to be negligible. If the odour is disliked or undesirable, soapy water can be used, but it is apt to leave a smear. White paint, if cleaned with paraffin, is inclined to become yellow with repeated application.

Exterior paint work (hall doors, etc.), may be cleaned by paraffin sprinkled sparingly on an old cloth, and rubbing. Doors so cleaned are found to blister less readily than when water is used, possibly because it evaporates more readily. A little linseed oil well rubbed on gives a polish by leaving a thin, hard, dry skin over the paint.

All paint work is improved if after cleaning it is given a thorough but light polishing with a soft non-fluffy cloth.

Enamel. This may be treated with soapy water in the same way as paint. Where water is permanently hard, borax dissolved in it has a softening effect, saving soap, and giving a good result (1 tablespoon borax dissolved in a little boiling water and added to 1 quart tepid water). Borax, however, does not soften temporary hard water, so that its use is of little value with such water.

The surface, when clean and dry, may be well polished with a very little furniture cream, or simply rubbed with a very soft cloth. The use of furniture cream should be avoided as long as possible, and employed only when enamel is getting dull and does not brighten well with rubbing only.

Varnished Wood. This may be washed with soapy water and well rinsed, but hot water cannot be used as this will soften the varnish. After thorough drying, it may be polished with a cloth or leather, or a few drops of linseed oil may be used.

Stained and Polished Floors. These, if sticky, may be wiped with a leather or cloth wrung out of warm soapy water, and rinsed with clean water. Polish weekly with a special oil or a wax polish.

POLISHED WOODS. These are woods used for their beauty of colour or graining, and are so treated that this is enhanced. They are chiefly walnut, mahogany, oak, rosewood, ebony, and other valuable woods. The commonest treatment is *french polishing*. The process is simple, but long and tedious and requires much practice. The wood is rubbed down with sandpaper till very smooth, then rubbed very evenly all over with a pad containing shellac, dissolved in alcohol, and a drop of linseed oil. When dry, this is rubbed down again, and the process repeated till a high polish has been obtained.

Other methods of preserving wood are: (1) Rubbing with linseed oil, which darkens, and gives a soft polish. It must, however, be rubbed frequently. (2) Rubbing with beeswax and turpentine gives an excellent polish, but requires constant hard rubbing. It is the best method for old oak.

Lacquering is a kind of french polishing, but the resin used is a secretion of a special tree, and the many coats are put on at long intervals, each one being well rubbed before the next is applied. The Chinese excel in lacquer work, producing beautiful specimens in black or red, sometimes gilded and painted. Their lacquer is extremely hard, taking a brilliant polish, and it will stand heat, a peculiarity not possessed by other varnishes.

Cleaning Polished Woods. In caring for polished woods, avoid heat, which will soften and remove polish, or cause white marks; friction with an abrasive, which will scratch it; spilling or leaving water on it, which may cause marks or warping; spilling medicines, perfume, etc., which may contain solvents of the polish, and which will make marks and stains difficult to remove. Ink also marks polish unless removed at once.

Ordinary dusting, with rubbing, keeps polished wood in good condition for a long time. When necessary (not oftener than once a month), a little good furniture cream may be applied sparingly, well rubbed in and polished. No trace should remain or dirt will stick rapidly. A hand passed lightly over the surface should, if this is well finished, leave no mark. Avoid using furniture

cream too often, and too much at a time. Soft cloths and " elbow grease " are far better for all polished woods than any cream.

Washing Polished Wood. This should be done only if furniture is really dirty and will not take a good polish because of the greasy matter covering it. Wood upon which too much polish, insufficiently rubbed off, has been used, very rapidly reaches this condition. Furniture is uninjured by this treatment if carried out with care ; even pianos may be so treated. The procedure is as follows—

Dust well ; wring a leather or soft cloth out of warm soapy water.

Wipe the furniture thoroughly, not allowing it to become wet, a small piece at a time.

Rinse with the cloth wrung out of clean, warm water, or vinegar and water, using about two tablespoonfuls of vinegar to a pint of water (vinegar, being acid, tends to give a slight polish).

Dry well ; when quite dry, polish in the usual way.

Carved Furniture. A liquid furniture polish will not clog the carving, and is preferable to a cream.

Old Oak. This does not generally require a high polish. Warm beer instead of soapy water, or vinegar and water, is effectual. It is possible that this may have a darkening effect, and the slight acidity tends to brighten without polishing. Linseed oil, which also darkens, may be used in place of a wax polish.

Ebony. This is cleaned like old oak.

Lacquer. If this is plain or ungilded, a very little furniture cream may be used occasionally, and very well rubbed ; but if there is any gilding, it will be removed by the cream. Use warm flour, rub, and then polish with a soft cloth. This applies to all kinds of lacquered ware, both wood and papier-mâché.

Scratched, Bruised, Heat-marked and Stained Furniture. Scratches and heat-marks, or stains of perfume, alcohol, etc., may be darkened and rendered less noticeable by applying linseed oil, and leaving it on for some time. Repeat until sufficiently dark. Polish as usual.

Ink should be absorbed at once with blotting paper. If the polish has not been affected, little harm will result ; and the stain may be removed, if more set, with vinegar and water ; the acid dissolves the iron, and the colouring matter is removed by the water.

Bruises and Dents, if severe, cannot be treated by home-made remedies. For slight ones, a pad of brown paper, well damped, may be put over the dent, and dried with an iron. This causes the wood to swell and fill out the dent. It cannot be used on furniture which has shellac in the polish, as a white mark is formed.

Veneer. Veneering is the name given to the process of overlaying an inferior wood with thin strips of a valuable one, in order to make it appear as if the article were entirely constructed of the better material. The applied wood is put on in extremely thin

sheets and attached by glue. Care must be taken in cleaning that the veneer is not chipped or warped.

Inlaid articles are produced by decorating a dark wood with strips of a lighter one, often in intricate patterns. These should receive careful treatment so that the inlaid strips are not loosened in any way.

Pulp Bowls. These are of pulped paper, pressed into shape, and covered with a specially prepared paint or enamel. They are very useful for washing up delicate things, and when not in use must be very well dried, or they will rot. Care must be taken to keep the paint covering intact, as if this becomes worn away or damaged, water can get in to rot the pulp, causing a hole.

To clean, wash as in the case of paint; as they become greasy from washing up, a little whitening in addition to soap and water may be used, or a few drops of turpentine on a cloth, but this latter may remove some of the paint.

To Mend Pulp Bowls. A leakage often occurs at the base of the bowl; if taken in time this may be successfully mended as follows—

Well cover the parts surrounding the hole, or the thin part, with a layer of size, on the inside of the bowl.

Place on it a layer of damp newspaper, and press well on to the size.

Allow this to dry, then repeat the layers of size and damp newspaper until a firm covering is obtained.

When quite dry, give two or three coats of a good enamel paint, allowing each coat to dry and harden for at least twenty-four hours before applying the next.

Another method, and a quicker one, is to size over the worn part and place over it a layer of pulped damp paper, made by soaking it in water, wringing out, and breaking it up finely. Whilst drying, press down with weights, size, and when dry, enamel as before.

Furniture Polishes and Creams consist chiefly of substances of a waxy nature, with a liquid to convey them. Beeswax, and other waxes, with turpentine, are commonly employed; also linseed oil and vinegar. The secret of successful polishing consists in using as little as possible of the polish, and rubbing very well. This distributes the wax, and produces a perfectly smooth, even surface.

CHAPTER XI

CLEANING OF METALS

THE principles on which the cleaning of metals is based have already been given. Ordinary grease and dirt is removed by washing in soap and water; soda may be used for the coarser metals, and paraffin is sometimes employed for iron and steel. Home-made metal polishes are cheaper and as efficient as bought ones; one has the advantage of knowing what they contain, and can be certain that the metal upon which they are employed will not be injured.

PROCEDURE FOR CLEANING METALS—

Protect surroundings before beginning work.

Remove grease and dirt.

Remove tarnish with a suitable reagent, rub well and polish.

Use cloths suitable to the metals cleaned; a leather aids in polishing.

All traces of cleaning material must be removed; if necessary, by washing.

SILVERWARE (including Britannia and white metal).

Table Silver should be washed immediately after use, in hot, soapy water. If there is a large amount it should be rinsed in separate hot water. Dry at once, and polish with a leather before putting away: this helps to keep it bright. *Egg stains* on silver may be rubbed with salt; the tarnish is due to silver sulphide from sulphur in the eggs, and the salt acts chiefly as an abrasive. Sulphur compounds in the air tarnish silver in the same way.

Teapots stained inside with tannin are easily cleaned if they are steeped overnight with strong soda water; this softens the deposit, which can then be removed by rubbing.

Cleaning. Silverware should be cleaned regularly, though if it can be kept bright by daily rubbing with a leather so much the better, as constant cleaning over a long period wears away the metal. The best cleaning agent is refined whitening, mixed to a paste with water, dilute ammonia, or methylated spirit. The two latter give a more brilliant polish, but the silver appears to tarnish again more readily. The paste is allowed to dry on the article before being removed. For embossed or chased work a plate-brush is useful, and where practicable, washing in hot water after the powder has dried will ensure its entire removal. This is also a quick and hygienic method for spoons and forks.

The basis of most commercial silver-cleaning preparations is either whiting or jeweller's rouge. Special cleaning cloths are impregnated with some fine abrasive, made to adhere to the cloth.

A very different method of cleaning silver articles is by means of an aluminium sheet or pan, together with a solution of washing soda. The sheet may be bought ready made, or an old aluminium saucepan may be used. The silver articles are placed on the sheet in a vessel, or in the saucepan, and covered with hot or boiling water containing washing soda (about one tablespoonful to a quart), and left for some time. The action is explained by Tinkler and Masters[1] as follows: "Aluminium dissolves in the alkaline solution, with the evolution of hydrogen in a nascent state. The nascent hydrogen acts upon the sulphides of the tarnish, decomposing them, and leaving the silver clean." The articles are then removed, rinsed and dried. The aluminium itself becomes tarnished by the action, and may be cleaned in the usual way.

COPPER. Though clean copper is not acted upon by dry air, it oxidizes in moist air, the oxide being rapidly converted to the green or blue substance copper carbonate (verdigris) by absorbing the carbon dioxide from the air. Verdigris is very poisonous, and as it is soluble in foodstuffs, copper cooking vessels must be clean and free from tarnish before use. Food has no action on clean copper, but if the copper is dirty, or the food is left long in contact with it, poisonous compounds are formed. Certain organic acids, especially acetic acid, form salts, copper acetate being one of the most poisonous; hence, all food should be removed from copper vessels immediately after cooking, and these should be at once washed.

Cleaning Ornamental Copper. Finely powdered bath-brick, moistened with sweet oil or paraffin, and applied with a cloth, may be used. Rottenstone and sweet oil give excellent results, but the rottenstone does not remove bad stains. A very good finish is obtained, and the metal does not tarnish nearly so quickly as when cleaned with ordinary polish. Commercial polishes are quick and convenient, but those containing mineral acids should be avoided. Lemon juice, with salt, may be used for badly stained copper, if good rinsing follows.

Cooking Utensils. Wash well in soap and water, using a scouring agent. The outside of copper utensils may be polished with dry whiting.

BRONZE, an alloy of copper and tin, with a little zinc or lead, is not usually polished. It may be washed in soapy water, and after drying apply a little sweet oil and finish with a soft cloth.

BRASS, which is copper alloyed with zinc, tarnishes and forms salts like copper, and is cleaned in the same way. *Engraved or cut brass* should be well washed in soapy water, with a scouring agent if necessary, and a brush, and well rinsed and dried. It may be brightened, and stains removed, by rubbing with a cut lemon, very quickly and thoroughly rinsing in hot water, drying, and polishing with a leather or soft cloth. No commercial polish should

[1] "Applied Chemistry." C. K. Tinkler and H. Masters.

be used, as it is impossible to remove this from the indentations, where it turns black.

Enamelled Brass Ware should have nothing used on it to scratch the enamel; powdered whiting may be used to polish.

Lacquered Brass or Copper is protected from the atmosphere by a thin transparent covering of spirit varnish, which prevents tarnishing. It should be dusted only; and, if greasy, gently washed in warm soapy water, dried and rubbed gently with a soft cloth. It is best not to wash often, as the coating wears off, and the uncovered brass goes black quickly. It is possible to re-lacquer, but all traces of previous lacquer must be removed, and the brass be thoroughly clean. Copper and brass ornaments can be kept clean a long time by painting them, after thorough cleaning, with a varnish made by dissolving shellac in methylated spirit. (See page 151.)

ALUMINIUM. This is unaffected by moist air or heat, but is dissolved by alkaline solutions, forming a dark tarnish. Vessels darkened in this way may be cleaned by organic acids. Boiling up apple parings, or similar acid materials, cleans the pan excellently. Cleaning with vinegar or lemon-juice is effective, but must be followed by thorough rinsing. No scouring agents containing soda may be used; steel wool is useful. Pure aluminium is soft, and articles made from it should have nothing harder than whiting used upon them. Many of the heavier makes, however, are alloys of aluminium, and are harder than pure aluminium. Whiting is generally sufficient for scouring purposes, especially if used with soap, and may also be used for polishing.

Greasy aluminium pans should be washed in very hot water with a little soap, but on no account should soda be used, and the soap itself should be of a good neutral quality.

There are several commercial preparations on the market for the cleaning and polishing of aluminium.

IRON AND STEEL. Iron is generally coated in some way to prevent its rusting.

Painted or Enamelled Ironwork is cleaned like painted wood. The enamelled parts of grates not in direct contact with heat require wiping with a damp cloth and rubbing with a dry one. When worn, they should be re-enamelled. Iron parts in direct contact with heat cannot be protected in any permanent way, as the heat burns off the enamel. Such iron is generally blackleaded. This should be done after every fire, or about once a week if the stove or grate is not being used. The parts most likely to require blackleading are the front bars and the plate over the fire. It is time and labour saving to enamel all the stove except these, to avoid having to blacklead the whole of it.

To Blacklead. Blacklead is composed largely of graphite, or lampblack (both pure forms of carbon), and is sold as a liquid, a

paste, or in lumps which require breaking up and mixing to a thin cream with water. The addition of a few drops of turpentine gives a more brilliant polish. The directions given with blacklead should be read and followed, as the polishes differ in composition.

General Procedure.

Protect surroundings with paper.

After cleaning the grate, flues, etc., and removing all dust, soot, and ash and any grease, apply the polish sparingly with a brush or rag, beginning at the highest point, and working downwards. A small part should be done at a time.

Rub well with a hard brush or paper, and polish with a soft one. Complete one portion before starting another.

If too much polish is used, there will be difficulty in getting a good surface.

Iron Cooking Utensils, tinned or enamelled inside, may be washed with soap and water and a mild abrasive; if greasy, a little soda may be used, but not left in them long, and the utensils must be well rinsed afterwards. Avoid hard abrasives, as these wear away the tinning and scratch the enamel. Time and labour are saved by filling saucepans, etc., with cold water and putting them on the stove to boil. Dry well before putting away.

Enamelled Ware. This should be washed in hot soapy water, with soda if necessary; but strong soda often used may have a deleterious effect on some enamels, causing them to chip more readily. Mild scouring agents may be used, but coarse and hard abrasives scratch and wear the enamel. Thoroughly dry before putting away, and handle with care to prevent chips and cracks.

Steel. This is the hardest metal used in the household, for which the hardest abrasives may be used. It is capable of taking a very high polish, but rusts very quickly wherever moisture is present. Any water spilt on it should at once be wiped off, and steel articles should not be exposed to damp. Rust destroys the material, and spots will spoil and roughen the surface. Grease and dust may be removed with paraffin; or, in the case of a fender or stove, with a cloth wrung out of hot soda water; dry immediately. Bath-brick, fine emery, ash, or steel wool may be used to polish, in one direction only to prevent a scratched appearance. Rubbing with a very little sweet oil after polishing helps to prevent quick rusting.

Rusty Steel. This may be cleaned by one of the following methods: (1) Cover the affected part with a lubricating oil overnight; this loosens the rust, which can then be rubbed off with the oil. Polish with emery paper. (2) Rub in one direction with emery paper sprinkled with paraffin; finish with an old cloth.

Cooking Utensils of Steel should be well scoured with hot soda water and fine sand, and dried well after rinsing before storing.

Knives. After use, these should be wiped free from grease, etc., with paper, and placed in a jug with hot water, which must not reach

the handles, or these may be loosened and spoilt. Wash separately in hot water, with soap and soda, the handles being kept dry. Dry immediately, the back of the blade being next the cloth to prevent cutting. Stainless knives require no further treatment, but plain steel knives must be cleaned, either by hand or by machine. Directions for using the machine must be carefully followed. For hand-cleaning, a leather-covered board, sprinkled with bath-brick or fine emery powder, may be used. The knives are well rubbed upon this, care being taken that the leather is not cut, until all stains are removed ; or the knives may be cleaned by a cork dipped in the polishing agent, rubbed up and down the length of the blade, and on the back. Another method is to fold a piece of old carpet or a newspaper, sprinkle a fold with powder, and rub the knives in this. A small wooden cleaner with a flat base of carborundum is available, which cleans knives quickly and well, without dust or trouble. After polishing, all knives should be dusted before being put away.

Tea and acids stain knives badly, and should be rinsed off immediately. The tannin in tea combines with the iron, making a black compound, iron tannate, a primitive kind of ink. Acids destroy the steel, and make marks on it if left.

Galvanized Iron and Zinc. Galvanized iron is iron with a surface coating of zinc. Zinc is soft, therefore the hard abrasives should not be used on it, as they may wear it away. Galvanized iron pails, etc., should be kept dry and free from grease. They should be cleaned and dried immediately after use, as stale grease, mixed with dirt, is very difficult to move. Wash in soapy water, using a little soda if necessary, and an abrasive such as whiting. Bath-brick and sand are sometimes used, but constant scouring with these injures the zinc. Paraffin may be used instead of soapy water, but must be well washed off.

OTHER METALS. Pure Zinc is seldom used, except for protecting tables and walls near gas stoves, etc. It may be washed with soap and water, and whiting used if necessary ; anything harder will scratch it.

Tin. This is not oxidized by moist air, therefore forms no tarnish. It is very slowly acted upon by acids and alkaline substances, and food left in contact with it for any length of time may form injurious compounds. To clean, use soapy water and a little soda, but boiling repeatedly with soda should be avoided for the reason given. Whiting brightens it excellently.

Pewter. This, an alloy of lead and tin, common at one time for drinking cups, plates, etc., is now valued only as an ornament. It is capable of taking a silvery polish, but is often preferred dull. It may be washed as usual, and rubbed after drying with a leather or soft cloth. If desired, whiting may be used to burnish. Neglected pewter may be cleaned with pewter mixture, left on all night, followed by washing and polishing. (See Appendix I.)

Lead is rarely used in the household, except occasionally for sinks. Being rather soft, it marks very easily. Paraffin and fine bath-brick are excellent for burnishing. Lead is naturally a silvery metal, but on exposure to air it immediately tarnishes, becoming covered with a dark oxide of lead, which acts as a protective coating.

Japanned Ware is made by coating metal with a mixture of resins and linseed oil, dried by heating in an oven to a high temperature and finished by polishing with rottenstone or pumice. It will stand heat, and is hence used largely for trays. To clean, wash with warm water and soap, and polish with furniture cream or hot flour, if desired.

HOME LACQUERING. Metals used for ornamental purposes may be thoroughly cleaned and then lacquered; this prevents their tarnishing, and they will remain bright for an indefinite time, the only care required being the same as for lacquered brass or copper bought in this condition. Certain commercial lacquers give excellent results, and the directions for use should be carefully followed. A home-made preparation can be made by dissolving about half an ounce of shellac in methylated spirit. The best way is to crush the shellac, put it in a graduated medicine bottle, and add about five tablespoonfuls of methylated spirit. Leave several days, shaking gently at intervals till clear; if necessary, filter through fine muslin, and apply with a soft brush to the perfectly clean, well-polished, and well-warmed metal. Work in one direction only, and do not go over any part twice, if possible, but be sure to leave no uncovered places. When the methylated spirit has evaporated, a thin transparent coating is left. Metals subjected to great heat, or to much handling, are not suitable for this treatment, but commercial preparations which will stand heat can be obtained. A commercial preparation now on the market gives a porcelain-like white coating to metal taps, etc.

CHAPTER XII

STONE AND SIMILAR SUBSTANCES: CHINA AND GLASS

UNDER this heading are included marble, tiles, stone and cement floors, steps, and hearthstones; stoneware sinks, lavatory pans, basins and baths are also included.

MARBLE. This is a hard, brittle form of calcium carbonate, occurring naturally in various colours and kinds. It is capable of taking a very high polish, and is frequently used for floors, steps, and the tops of washhand-stands; mantelpieces and larder shelves are often of marble. Monuments and sculptured work are generally in this material. Being a carbonate, it is easily attacked by acids, including organic acids, which quickly remove the polish and dissolve the marble with evolution of carbon dioxide. Fruit and other acid substances should therefore never come in contact with marble.

In Cleaning Marble, care should be taken to preserve the polish, if present; acids, medicine, or water left lying on it, all injure it. To wash, use warm water and soap, and a very soft nail brush for carved parts. Rinse and dry thoroughly. Precipitated whiting may be used with the soap, or marble cream alone. (See Appendix I.) To improve the finish, polish with a little furniture cream. *Neglected marble,* and marble that has lost its polish, may be cleaned by leaving on marble mixture all night, washing and finishing the next day.

Stains rarely occur as long as the polish is intact, but if this is worn, or medicines and acids are spilt, stains may result. They can generally be removed by marble mixture, but rust and grease may require other methods.

Rust occurs from medicines containing iron, or from contact with wet iron, or sometimes from the rusting of iron nails used in construction. To remove, apply a little lemon juice to the mark; wash and dry quickly. Acids dissolve the iron oxide (rust), but as they also dissolve the marble, endeavour should be made to touch the rust mark only, and to remove all traces of the acid very quickly. A medicine dropper or fountain-pen filler is useful in controlling the application of the lemon juice.

Grease takes effect only when the polish has worn away, as it can then penetrate. It may be absorbed by a paste of fuller's-earth left on all night, and repeated as often as necessary.

TILES. These are all made from clay, moulded to the required shape, and fired. They may be unglazed, or glazed on one side,

and are in the form of flat plates, or in bricks, according to the purpose for which they are intended. Glazed tiles and bricks are used for fireplace surrounds and hearths, and for places where non-absorption and easy cleaning are necessary. Unglazed tiles are used for floorings and other purposes.

Glazed Tiles may be cleaned with soap and water, well rinsed to remove soap, which causes cloudiness if left, and well rubbed after drying. A little furniture cream gives good results for hearths and surrounds, and rubbing with newspaper is excellent for bringing up à good polish. If hearths are very dirty from the fire, a fine scouring agent may be used, such as wood ash, or pumice powder, but anything hard or coarse will spoil the glaze.

Unglazed Tiles. These may be washed with soap and water, or scrubbed if necessary with scrubbing mixture, or sand, or a commercial scouring agent. Good rinsing and thorough drying are essential. Soda should be avoided, as it gives red tiles a greyish look. No grease or soap should be allowed to remain on floors, as this is dangerous.

FLOORS, STEPS, AND HEARTHSTONES.

Stone Floors, if smooth, may be washed with soda and hot water. Soap, tending to make them slippery, should be avoided. Sand or other scouring agent may be necessary if very dirty. Rough stone and cement may be scrubbed with soap and a scouring agent. Cement is an artificial stone made by heating clay and chalk; when mixed with water it forms a paste which sets very hard.

Steps and Hearths may be washed with water and soda, and scrubbed if necessary; and may be left plain or whitened with hearthstone. In some districts they are coloured with yellow or red ochre. Steps kept clean but unwhitened save much labour, and do not look at all unsightly; but it is customary in the south of England to whiten them all over. In the northern counties the edges only are done with a narrow band of hearthstoning.

To Hearthstone. The process is the same for both hearthstones and steps.

Remove all loose dust, ashes, etc.; scrub to remove all the old hearthstone; any grease marks should be removed with hot water and soda.

Dip the hearthstone in water, and rub with a circular movement over the whole stone.

Damp the cloth, and, with a small amount of hearthstone on it, work round in a circular manner, ending by wiping in straight lines to give a more even finish. This process distributes the hearthstone, which is then left to dry white.

Care must be taken not to smear the surroundings. It is a good plan to outline the edge first, and work to it. *Mason's dust* may be used in place of hearthstone. It is sprinkled on the wet hearth,

and worked in as before described. If a hearth only requires neatening, it is not necessary to remove all the old hearthstone, but all loose dust should be swept up.

Ochre, yellow or red, is best mixed to a cream with made laundry starch (which makes it adhere), and applied to the stone with a rag or a brush.

STONEWARE SINKS AND LAVATORY PANS.

Sinks. These are usually glazed, and though unglazed ones are sometimes found in older houses, they absorb much grease and are now seldom installed. They are cleaned in the same way as unglazed tiles, but the grease is difficult to remove.

Glazed Sinks are much more manageable and hygienic, but they require care and attention to keep them in good condition. The immediate surroundings and the waste pipe must be included in the care. All sinks should be left clean after use; no bits or tea leaves should be allowed to go down the drain, or collect on the grating, but be put in a proper sink basket kept in one corner. If this is not done, there is danger of stopping up the trap, causing much trouble and annoyance. Very dirty or greasy water should be emptied outside, if possible.

Daily Care of Sinks. Empty sink basket, wash in hot water and soap, rinse and dry.

Scrub, rinse and dry draining boards. Wipe clean any backing, and rub up taps, if of brass; nickel or enamelled taps only require wiping.

Wash sink free from grease with hot water and soap or soda, using a mild abrasive if necessary, for any marks. Hard abrasives wear off and scratch the glaze, and once this occurs cleaning is much more difficult.

Rinse well, and dry. Paraffin may be used on a cloth, instead of soap and water, for a greasy sink, but requires to be well rinsed away.

Brighten the metal rim and grating with Vim or some agent that will mix with water (not a metal polish).

Clean the Waste Pipe by pouring a kettle of boiling water quickly through the grid, on which is placed a large lump of soda. Follow by more hot water, and then with cold.

The reason for this is to remove the greasy soapy water from the trap. The soda water will loosen and emulsify the fat and grease in the pipe, and this may set when cold in a layer on the top of the trap water, clogging the pipe. Clean hot water washes out the trap, and the final rinsing leaves it full of clean, cold water.

The object of the trap is to prevent any gases, formed by the decomposition of organic matter in the gulley, from being drawn into the house. The water in the trap stops the gases from passing up, but if the water in it is dirty and greasy, it will itself start

decomposing and giving off gases which can rise unchecked into the house. Hence the importance of keeping the whole pipe free from grease, and of always having clean water in the trap. (Fig. 60.)

Weekly Care of Sinks. Clean thoroughly the sink and surroundings, including the adjacent walls and the pipes underneath. After cleaning waste-pipe, pour down a solution of 1 in 20 carbolic, and allow to stand in trap. Other disinfectants may be used, according to directions given on the label.

Stopped Sinks. Stoppage generally occurs through carelessness in allowing tea-leaves, etc., to get down into the trap, or by an accumulation of grease. This may be removed by unscrewing the nut which is found at the lowest point of the trap, having first

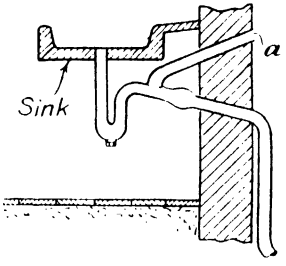


FIG. 60.—DIAGRAM TO SHOW THE TRAPPING OF A SINK.
(*a*) Ventilation and anti-siphonage pipe.

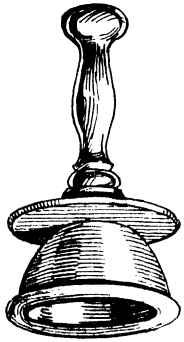


FIG. 61.—RUBBER FORCE CUP FOR UNSTOPPING DRAINS.

placed a bowl or pail to catch the water. The obstruction can then be removed with a cane or wire ; water is then poured down the pipe. When all is quite clean, replace the washer and nut, screwing up tightly. Test the trap by running water down it. Another method is to use a rubber plunger. (Fig. 61.)

LAVATORY PANS, BASINS, AND BATHS.

Lavatory Pans are of earthenware, with a hard glaze. They should be kept very clean, as discoloration and cracking of the glaze will set in if neglected, the latter especially being a source of danger, as the earthenware is no longer non-absorbent. Pans should be brushed out thoroughly every day with a lavatory brush, and well flushed.

Weekly Care. The pan may be steeped in hot soda water, well brushed both inside and out, rinsed thoroughly and disinfected with 1 in 20 carbolic solution, which is poured in and allowed to

remain. The brush should be well rinsed in slop pail, shaken, and hung up to dry.

Neglected Pans are difficult to clean, and may require stronger methods ; hydrochloric acid (muriatic acid, spirit of salts) may be used, but this may affect the glaze if used frequently. It should be applied with care, as it is a poison and a very strong acid. Use as follows : Attach a pad of old woollen or cotton material to a stick. Dip it into the acid and rub the discoloured part. Flush the pan well, and burn the stick and pad at once, as the acid will destroy anything which comes in contact with it. For very obstinate stains chlorinated lime, sprinkled in overnight, may be found effective.

Flushing. Flushing a pipe or drain means emptying a volume of water suddenly down it, so that it runs full for a short time. Allowing a tap to run does not flush the drain ; the essential point is that there should be sufficient water to fill it completely. A bucket of water quickly poured in will flush effectively, while pouring down several gallons slowly will have nothing like the desired effect.

Baths and Basins. These may be of porcelain-enamelled iron or entirely of earthenware. In either case the treatment is the same.

Neither baths nor basins are usually very greasy, but the deposit of mixed soap, dirt and grease formed in hard-water districts may be found difficult to move if left for any length of time. It may be washed off with soap and water ; if necessary, use a soft abrasive ; rinse and dry well. Hard abrasives and brushes should be avoided, as these may scratch or wear the surface. Cleaning is lessened and the bath better preserved if a cloth or soft brush is provided for rinsing it immediately after use.

CHINA AND GLASS.—CHINA.

General Method. Wash in pulp or wooden bowl, as there is less danger of breaking.

Use hot soapy water ; soda may be necessary for greasy plates and kitchen ware, but should not be used for any gilded china.

Remove any scraps ; sort and pile the china.

Wash the cleanest articles first, and change water when necessary.

Not more than two articles should be washed at a time. Special attention is required by handles, spouts, and grooved parts.

If much is being washed, rinse in a separate bath of hot water, drain and dry. If a plate-rack is used, a better gloss is obtained by rinsing in cold, instead of hot, water.

Burnt marks on cooking china can be removed with salt, fine ash, etc., after being steeped for a considerable time.

China ornaments, with long narrow necks, are so difficult to dry inside that washing can legitimately be avoided by stuffing the necks with paper to prevent dust entering.

Mending. If china in constant use is considered of sufficient

value to mend when broken, it may be sent to an expert for riveting. Anything less strong is unsatisfactory for constant washing in hot water, and the process cannot be carried out at home. The charge is according to the number of rivets. An article requiring only occasional washing can, however, be successfully mended with a commercial preparation guaranteed to stand water; there are several of these on the market, most of which are good; the directions with all should be carefully followed. Plaster of Paris, mixed to the consistency of cream with stationers' gum or white of egg, is also good. In mending, observance of the following points helps to ensure success—

The pieces must be perfectly clean and dry and the edges rough, or they will not adhere. This is naturally so in a fresh break, but an old one may have worn smooth. Light scraping with a penknife cleans and renews the rough surface.

If washing is necessary, place the article in a warm oven to dry thoroughly. The slight warming of the china will also keep the cement from drying too quickly.

Apply a *thin* film of cement to both surfaces of the break, press them well together, and secure by tying with tape. If much cement is used, adhesion is hindered, and there may be difficulty in removing the excess.

Remove all traces of cement on outside surfaces, and leave the article overnight or longer. If many pieces have to be joined, each must be allowed to dry thoroughly before another is added.

GLASS. As glass is a bad conductor of heat, unequal expansion will take place in hot water, causing cracking except in very thin vessels; sudden changes of temperature, such as occur when hot glass is put on to a very cold surface, will crack it; but if the glass is warmed up very slowly, hotter water may be used. However, for safety's sake, warm water is best. Glass takes a better polish if dried while still warm; if rinsed in cold water, it should drain well before being dried. A lintless cloth, preferably of linen, gives the best result; old table napkins are excellent.

Bottles, etc., washed in warm water and allowed to get cold before drying, sometimes have a whitish film of condensation difficult to remove if the bottles cannot be wiped inside. This can be prevented by rinsing well in cold water after washing, and allowing to drain well.

General Method. Use warm, not hot, water, and soap, and a pulp or wooden bowl to prevent chipping.

Steep milky articles in cold water before washing, to dissolve the protein, which is set by hot water.

Wash one article at a time, using a soft brush for crevices and cut glass.

Rinse in warm or cold water, to which a few drops of vinegar may be added to produce a more brilliant polish.

Dry and polish with a soft, lintless cloth.

All glassware should be clear and brilliant, free from fingermarks. Polish before using with a soft cloth. *Lamp globes* must be thoroughly dried and put in a warm place before use, to prevent cracking.

Glass Water-bottles and Vases which have become discoloured, and stained decanters, may be cleaned as follows—

Washed tea-leaves, small pieces of paper or blotting paper, put in the bottle and shaken well with water remove the stains by friction.

The deposits in water-bottles are generally of chalk from temporary hard water, and are dissolved by acids. Where the above method is unsuccessful, vinegar and water may be used instead, and salt substituted for the paper or tea-leaves.

Where both these methods fail, sand or fine shot may be used with water, either plain or with vinegar, but the friction, while removing the stain, may scratch the inside of the bottle.

After removing stains, wash well and dry as usual. Decanters which cannot be dried inside should be placed upside-down in a jug or jam pot to drain. Bedroom water-bottles should be thoroughly rinsed every day.

Glass Stoppers which have become fixed may be loosened with sweet oil, applied to the fixed part, and left in a warm place for some time. Gentle tapping all round the neck near the stopper is sometimes effective.

Windows. These should not be cleaned on a frosty day, as the glass is then brittle and liable to break. Cleaning in full sunshine, also, makes the glass smeary. All windows should be kept clean, the frequency of the operation being dependent on the locality; they may all be cleaned at once, or those of each room done at the weekly clean, according to personal preference.

General Procedure: Remove curtains, or pin them out of the way.

Lower the blinds, dust, and roll up.

Protect the floor and wall under the window, and remove dust from window frame and surroundings.

Use warm or cold water, a leather, a soft napless cloth, or a pad of newspaper.

Begin at the top, with the cloth wrung out of the water, giving special care to corners.

The same leather or cloth, rinsed and wrung out tightly, may be used for drying, or a dry cloth, or another piece of newspaper. Working quickly will avoid smears. The outside may be done first to show up any marks left when the inside has been finished. Sash windows can be manipulated so that the operator does not sit outside the window, which is an extremely dangerous practice. Where the stretch is too great, a pad at the end of a stick may be used; and there is also on the market an appliance for cleaning the outside of the window.

Fly marks on windows may be removed by rubbing with a blue bag.

Paint marks can be loosened with turpentine.

Mirrors and Pictures. It is undesirable that any moisture should get behind the glass of these, as it will cause discoloration of the mirror, and may spoil the picture. If water is used, therefore, the cloth must be very tightly wrung out, and the glass cleaned in the same way as the window, all necessary attention being given to the frame first. A better method is to sprinkle a few drops of methylated spirit on a cloth or tissue paper, and well polish the glass.

Mending Glass. This is similar to mending china; there are several preparations guaranteed to mend glass so that it will stand water. For method, *see* Mending of China.

Plastics. These are manufactured substances of a highly complex chemical composition which at some stage in their preparation are liquid or semi-soft and capable of being moulded into permanent shapes. These are roughly divided into two kinds—those capable of withstanding heat in the finished form, and those that are not. They can be produced in fixed shapes moulded to any desired pattern and in fibres which may be woven to produce a material; or they may be rolled out in very thin pliable sheets resembling material. In some forms they are extremely strong, being used for parts of machinery in place of metal, and, as they are very much lighter than wood or metal, can in many cases take the place of these materials. The use of plastics for all kinds of domestic purposes will undoubtedly increase, and a great deal of research is in progress as to their suitability for many purposes. They are extensively used in electrical equipment, for fittings of all kinds, where lightness, durability, and a clean finish are desirable. They can be produced in any desired colour, which makes them decorative. In flexible form it is becoming possible to use them in place of leather for upholstering, shoes, and so on. Many forms at present produced are inclined to be brittle, and some may be affected by hot liquids, but these disadvantages will probably be overcome. To clean, dust well and wipe with a damp cloth, drying and polishing if necessary—as for china; avoid abrasives and rough handling. Some of the plastic "materials" are melted by heat; they should be washed only with cold water and soap, as for rubber.

CHAPTER XIII

FLOOR COVERINGS, UPHOLSTERED FURNITURE, AND LEATHER

CARPETS. The length of time a carpet will last depends as much on the care it receives as upon the wear and tear of use. As elsewhere remarked, it is the friction of contained dirt which grinds it out, and the obvious remedy is to keep it as free as possible from such dirt.

Care of Carpets. The essentials are—

Proper laying; a thick underlay, and smooth floor underneath will lengthen the life of the least expensive carpet.

Daily removal of surface dust, crumbs, etc., by means of a carpet sweeper, or fibre brush and dustpan.

Removal of stains immediately they occur.

Thorough weekly attention to remove as much dust as possible; and a periodical removal of the carpet for more complete treatment. Stair carpets require this more often than other carpets.

Proper respect for the carpet when wearing outdoor boots or shoes, especially when dirty; carefully protecting it when doing dirty work; and using clean utensils.

Alteration of tread when necessary, especially of stair carpets.

Protection from strong sunlight, especially in the early morning, when the rays are more horizontal. In the middle of the day, the sun's rays, though hotter, are more nearly vertical, and so attack less area; this, however, should be protected, to prevent fading.

Avoid dragging heavy furniture over carpets; the use of castors, well-oiled, and of "domes of silence," wherever possible, makes moving easy, and mitigates the effect on the carpet.

Periodical inspection for the presence of moths. If any signs are discovered, iron with a hot iron on the wrong side, first placing a wet cloth over the affected part; this will kill the eggs. Before relaying, sprinkle moth preventive under the carpet. A floor stained with solignum prevents moths from laying their eggs in the carpet.

Signs of wear and tear at the edges and seams should be looked for, and thin edges strengthened by carpet braid sewn on the wrong side.

Weekly Care of Carpets. Use the vacuum cleaner, which removes the maximum amount of dust without raising it into the room. The nozzle is passed over the whole carpet systematically while the power, hand or electric, is applied. Follow with a sweeper, if necessary, to take up any threads or hairs left by the vacuum

cleaner. These become entangled in the pile, and are not generally removed by suction.

The alternative method is to use a long-handled fibre broom. As this raises the dust in sweeping, either washed used tea-leaves, damp, but not wet, or a commercial preparation sold for the purpose, may be used to keep it down, sprinkled over the carpet as each portion is done. Newspaper wrung out of water and torn up may be substituted.

Protect furniture and ornaments with dust sheets. Sweep the way of the pile, if possible towards the hearth or window, in strips, each overlapping so that no parts are missed. The dust and tea-leaves are swept into a dustpan and burnt.

Turn back the edges of a carpet square and brush them ; if the carpet touches the wall, use a small brush at this part, and sweep away from wall into dustpan.

Spring Cleaning of Carpets. There are several ways of giving carpets a thorough cleaning, which they will require on an average once a year, according to locality, and the amount of use they get :

They may be sent to be cleaned.

They may be cleaned by a powerful electric cleaner.

They may be taken up and beaten, followed, if necessary, by shampooing.

The first method is probably the most expensive ; the second may be done either by hiring the cleaner, or engaging the services of a carpet-cleaning company. The third is the one most generally adopted by householders who have a yard or garden. The first two call for no further comment, but the third is described in detail.

To Beat Carpets. This may be done either on a line or on grass.

After removing the carpet carefully (see p. 63), place it wrong side out over a strong, clean line, away from any windows, if possible ; if not, these will have to be shut, unless the wind is blowing in the opposite direction. A good breeze is favourable, and the dust will quickly be carried away. A bright day is the best to choose, as the exposure for a short time to sunlight, unless this is very strong, will not injure the carpet, and destroys any bacterial life present.

Beat well, brushing inside from time to time, and continue until no more dust comes out. The right side may also be beaten, and the position of the carpet should be changed from time to time. If there is a lawn or grass plot, the carpet may be laid right side up on this, and beaten and brushed alternately till clean. After dust has ceased to come out, the carpet may be turned over and pulled along the grass. This will remove any loose dust still adhering, and is said to brighten the colour. The grass should, of course, be clean and dry.

Shampooing Carpets. After the removal of dust, and the relaying of the carpet, it may be washed or shampooed to revive the colour.

This may be done by commercial carpet soap, a home-made carpet soap, or a good yellow soap.

For shampooing have ready a bowl of warm water, the soap, and two cloths, one for washing and one for drying.

Wash over a small portion of carpet with a circular motion.

Apply a small quantity of carpet soap to the damp cloth, and rub the carpet well, changing the position of the cloth as necessary. Continue till the cloth remains clean.

Rinse cloth thoroughly in water, and rinse off the soap the way of the pile, but do not use the cloth very wet.

Dry with the second cloth, rubbing the carpet the way of the pile.

Caution. The carpet must not be made wet right through; it should be damped only on the surface and should be dried as speedily as possible by means of open windows, and by a fire if necessary. It should not be walked upon until dry.

Felt is not suitable for such treatment, as it stretches out of shape; but Kidderminster carpets and wool rugs may be actually washed in soapy water, well rinsed in warm water, and dried.

Colour may be revived and the carpet cleaned at the same time by the use of one of the following, instead of soap, using the same method—

Vinegar and water, 1 tablespoonful to 1 quart.

Ammonia and water, if the colours are fast, 1 tablespoonful to 1 quart.

Ox-gall, ½ pint, to a bucket of warm water.

Ox-gall is naturally alkaline, and has a very brightening effect on the carpet, which should be well rinsed after an application. The gall must be perfectly fresh, and may be obtained from a butcher.

Ammonia should not be used unless the colours are known to be fast, or they may run, or fade.

Carpet rugs are treated in the same way as carpets. If shaken out of doors, they should be folded in half, and never held by the corners, as this weakens and may tear them.

Fur Rugs. For special cleaning treat as for furs.

The Removal of Stains from Carpets. Stains, if removed as soon as they occur, may do little harm to the carpet, but if left, they will only be removed with difficulty, if at all. Many may be removed by ordinary washing; special methods are indicated below.

Grease stains, such as candle grease.

Remove surface grease with the handle of an old spoon, or other blunt instrument.

Over the mark place a piece of unglazed brown paper, or blotting paper, and on this pass a warm iron slowly but *lightly*. This melts the grease, which is absorbed by the paper. As the latter becomes greasy, it should be moved to a fresh place. Repeat until no more grease appears to come out.

Oil stains (machine oil, etc.).

Cover mark with a thick layer of fuller's earth, either dry or made into a paste with water.

Leave overnight, then brush or beat out. If necessary, repeat until all the oil has been absorbed.

Soot Stain. Great care should be taken not to spill soot on the carpet, as it is very difficult to remove. Regular attention to chimneys will prevent an accidental fall of soot, which is a frequent cause of trouble. The soot is extremely light, and must be removed with great care. Weigh it down by sprinkling with common salt, and very carefully brush lightly with the tip of the brush into pan. Continue brushing very gently till all soot is removed.

The vacuum cleaner will pick up soot if excess is lifted first with a spoon or shovel, but the cleaner must on no account press on to the soot.

Paint and Tar Stains.—Paint. If fresh, scrape up as much as possible, and then work round the stain with turpentine, starting at the outside, and working to the centre, constantly using a fresh portion of rag as it absorbs the paint.

Finish by washing with soapy water.

Tar. Scrape off as much as possible; soften the remainder with butter or lard, and leave for a time; or benzol may be used, as for paint.

Wash well with ammonia and soapy water to remove grease and tar; rinse and dry.

Ink (Black). Absorb with blotting paper as much as possible.

Remove stains by wiping with a cloth wrung out of vinegar and water, or milk; if the latter is used, wash afterwards with soap to remove grease. If ink has dried on, it is very difficult to remove without injuring the carpet.

Ink (Red) is difficult to remove, as it is usually an aniline dye. A saturated solution of borax (i.e. as much borax as will dissolve) may sometimes remove the stain; or ammonia may be used, but this may spoil the colour of the carpet.

LINOLEUMS. Linoleum will wear for a considerable time if carefully treated. As elsewhere described, it consists of a mixture of cork resin and linseed oil, with a protective covering. It is therefore injured by *friction*, which roughens the surface. If once a brush is used, it will have to be continued, as the rough surface will hold dirt.

Leaving it wet causes cracking and rotting. If the surface has been roughened by scrubbing, this happens quicker as the water will readily penetrate, causing the cork to swell.

Alkaline substances cause rotting and cracking.

Great heat also causes drying and cracking.

Linoleum should therefore be washed only when necessary, and then with care.

Daily Care of Linoleum. Sweep with a soft broom to remove surface dust. If kept polished, which saves it considerably, dry polish with a brush or pad; or with a polishing mop, which dusts and polishes at the same time.

Washing. Linoleum not kept polished may be washed when necessary in the following manner—

Pack up furniture to allow as much free floor space as possible, and remove all dust from floor and surroundings.

Wash a small portion at a time with warm water, using a flannel, and soap applied sparingly, and avoid making the linoleum too wet.

Rinse off, and dry either with the cloth wrung out tightly, or with a second cloth.

Each successive portion washed should overlap the washed part, to avoid leaving it streaky.

Change the water as it becomes dirty, being careful that the order of work is so arranged that no treading on the washed parts is necessary.

When quite dry, it may be given a gloss, but not a high polish, with milk; or it may be polished with a commercial wax polish, or beeswax and turpentine, as for polished wood floors. It is, however, dangerous to polish under mats.

Linoleums habitually kept polished, e.g. surrounds, require washing only at infrequent intervals, but they should not be allowed to become sticky. Daily hard mopping or brushing will serve to keep them sufficiently bright without daily application of polish.

For patching linoleum, any pieces left over from laying come in useful; they should have been kept rolled right-side out. The method of patching is as follows—

Place a new piece of linoleum over the worn part, so that the pattern matches. This piece should be a little larger than the worn part. With a sharp knife cut round the edge of the new piece, cleanly, removing the worn part. The new piece must now fit exactly into the hole.

Place the patch in position, and press towards edges.

Secure with headless brads placed alternately on patch and on surround, about quarter of an inch from the edge, and one and a half inches apart, except at the corners, where they must be nearer. The brads must be well driven in, and the whole surface should feel smooth when the hand is passed over it.

Oil Cloth. This may be treated in the same way as linoleum. Where kept for use on a table, roll it right-side out on a stick; and if it is to be stored for any length of time, smearing with vaseline will keep it supple.

Cork lino and cork carpets may be kept clean by sweeping, but they are not generally polished. They can be washed when necessary with warm water and soap, but soda should not be used.

They should be well dried, and can be rubbed over with a special cream supplied by the makers.

MATTINGS. Rush, cocoanut, etc., mattings are easily cleaned. If small enough, shake out of doors; otherwise sweep daily. A vacuum cleaner takes up the dust that passes through, and may be used weekly.

For thorough cleaning, they may be washed with soap and tepid water, and rinsed in cold salt and water. Use a brush for all except delicate mattings. When coloured, use salt and water only. Dry quickly and thoroughly before relaying.

Door Mats. These may be beaten daily, away from doors and windows, by placing face downwards, and beating with a stick. If very dirty they may be well scrubbed with warm, soapy water, but not made too wet. Rinse in cold salt and water, to stiffen the fibres, which are softened by soap and warm water. Hang up to dry thoroughly.

UPHOLSTERED FURNITURE (other than Leather). This should be dusted daily, and, if necessary, brushed. Treatment by the vacuum cleaner is the most efficient method of removing dust. When the room is turned out, upholstery should be beaten well (except that upholstered in silk, which would split) and brushed thoroughly, especially where the seat and back join.

It may be cleaned to remove surface dirt, and to revive colours, by—

(*a*) Warm bran, used in the manner described for furs.

(*b*) Vinegar and water, 1 tablespoon to 1 quart. Avoid making the material too wet.

(*c*) For silk, breadcrumbs and petrol, or methylated spirit, mixed to a dough and rubbed on.

Treat in the open air, or place on dust sheet or paper before beginning operations.

Stains are removed as described for carpets.

Materials that might be injured by hard brushing may be kept free from dust by wiping carefully with a perfectly clean cloth whenever the room is dusted.

Bamboo, Wicker, Rush, and Caned Furniture. Keep quite free from dust, using a brush where necessary. All except brown wicker may be washed, but it is not wise to do this too frequently, as the water softens and causes splitting of the material. When very dirty, wash with soap and tepid water, used rather sparingly; a nail brush is helpful for difficult parts. Salt and water may be used for articles that are only slightly dirty. Both sides should be washed, if possible, and special care should be taken with a cane seat to prevent stretching. A good plan is to give support by holding a cloth underneath while washing the top. All such furniture should be quickly dried in the open air; wickerwork, cane, and bamboo may be polished with furniture cream when dry.

Brown Wicker should not be cleaned with soap and water, as this may remove the stain ; paraffin on a cloth may be used with good results. The furniture should be left in the open air until all odour of paraffin has gone. Linseed oil well rubbed on may also be used.

LEATHER. Leather is one of the toughest and most hard-wearing substances known. It is made from skins of animals, prepared and treated in such a manner that it does not decompose, and becomes supple and resilient. Large skins, called hides, come from oxen and horses, while the smaller skins of goat, sheep, etc., are also used. The skins are first washed with water to soften them and are then treated with lime to remove hair and loose skin. After this they are treated to remove lime, and then tanned. The tanning process, carried out by means of tannin from oak-bark and other substances, is very slow, and takes many weeks. After tanning, the leathers are finished and dressed according to the kind of leather and purpose for which it is required. The following are usual methods of dressing leather—

Currying. In this process the leather is smoothed and pared down on the flesh side, or is split, if thick, into several layers. It is also rendered soft and pliable and made waterproof, and given a surface finish ; waterproofing is done by allowing a mixture of tallow and cod oil to penetrate the leather gradually.

Tawing is the treatment of skins by mineral salts and is employed for glove leathers and soft leather for boots and shoes.

Shamoying is the process of making the leather very soft and pliable by soaking it with oil, and was originally used for deer and chamois skin (hence the name) ; most leather of this nature is now obtained from split sheep skin, and known as wash leather.

Morocco Leather originated from goat skin, dyed and richly grained, but the name is now applied to any leather, chiefly split calf and sheep skin, finished to resemble the original morocco leather.

Russia Leather is, similarly, any leather with a smooth finish, and treated with the aromatic oils which give it its characteristic odour.

Imitation Leathers are on the market, and are very tough and durable. They are made by spreading a mixture of various substances, such as linseed oil, driers, and pigments, on a canvas or other backing, and finished to resemble leather. They are extensively used for upholstery, etc., in place of real leather.

CARE AND CLEANING OF LEATHER. Leather-upholstered furniture should be kept free from dust, especially in folds or round buttons. A little good furniture polish used occasionally helps to keep it in good condition, as it supplies oils and waxes which make the material supple and prevent cracking. Dirty leather may be cleaned by wiping with a damp cloth or rubbing well with linseed oil and vinegar (2 pts. oil to 1 of vinegar) and polishing afterwards.

Imitation Leather may be washed, if very dirty, with soap and

water, but should not be made too wet ; after drying, it may be polished with a furniture cream.

Boots and Shoes. Boot and shoe leathers are described under various names. *Bullock skin* makes up into *calf* (box or willow). *Glace leather,* which is softer, comes from the goat and kid. *Oxhide* is used for sole leather and for the very thick leather on men's working boots. *Patent* leather is made by enamelling or varnishing leather. *Suede* is the name given to leathers made up on the wrong side, with a rough, soft finish.

Crocodile, Alligator, and Snake Skins are also used for shoes.

CARE AND CLEANING OF FOOTWEAR. The length of service given by footwear depends first on the quality, and the kind of wear it gets, but much also depends on cleaning, since carelessness in this causes the leather to deteriorate and therefore wear out sooner. Properly made and cared-for leather footwear will wear for years.

Remove as much mud as possible before entering the house. Any left on should not be scraped off with a metal instrument, as this scratches and may cut the leather. Wiping with a damp cloth is effective.

If wet, allow shoes to dry slowly, away from heat, but in a warm, airy place, lying on their sides to allow the soles to dry.

To keep in shape, put on trees or stuff with paper, on removal.

Before cleaning, brush to remove dust, and clean out of doors or on a protected table.

Apply polish sparingly, rubbing in well, to the whole shoe, including the tongue, waist, heel and edge of sole. Any laces should be tucked inside to prevent soiling.

Polish well, and finish with a light rubbing with a velvet pad or soft cloth. If several brushes are used, they should be numbered and used in order. Old pieces of material, preferably old stockings, make good polishers.

Boot Polishes. These consist principally of a waxy substance or an oil, turpentine, a colouring matter, and a preservative. For black polish, carbon in a finely-divided condition is used, and for brown polish yellow ochre and other pigments. Other substances may also be present ; cheap boot polishes sometimes contain acids, which, as they injure leather in time, should be avoided.

Blacking. This should be used only on the thick leather boots of workmen.

Patent Leather. This requires grease of some kind to prevent cracking and hardening while not in use. Rub with vaseline or olive oil ; before using, all traces should be removed by rubbing with a soft cloth. Milk may be used in the same way. Polish with a commercial cream sold for the purpose.

Suede. Remove mud by brushing well.

Remove grease marks with petrol or benzine.

Clean with warm bran.

Brush well; if material is shiny use a wire brush, or old fine emery paper.

A suede cleaning ball of the same colour as the suede, or a liquid which dries on and is then brushed off, may be used if preferred.

White Canvas Shoes and Buckskin Shoes. Remove mud by wiping and brushing. Grass stains can be removed by methylated spirit.

To clean, apply wet prepared pipe clay, and allow to dry. Repeat if necessary, and brush, when dry, before using, to avoid making white marks on clothes, etc.

White Kid Shoes may be cleaned with a commercial cream, specially prepared, applied with soft material.

Waterproofing. Shoes may be *waterproofed* by rubbing all over with dubbin, bought or home made, or mutton suet. Dubbin is essentially a fat and a wax, such as tallow and beeswax, melted together, with a little turpentine added; and rubbed well in when cold.

Goloshes. Wipe off mud with damp cloth; dry well, and polish, if desired, with a few drops of turpentine.

To Prevent Creaking apply oil or fat liberally to the soles. Leather improves with keeping, but from time to time will require applications of vaseline or sweet oil to keep it supple, and to prevent hardening. Holding the feet near the fire causes shoes to creak by drying the leather.

Shoes of Satin or Brocade may be cleaned with methylated spirit and breadcrumbs, or by petrol. When shabby, they may be re-covered very easily at home.

Gold and Silver Tinsel Footwear should be kept wrapped in black paper and in a dry place, to prevent tarnishing. It is possible to clean them to some extent by rubbing with magnesia, or one of the commercial cleaning-cloths now on the market.

Leather Articles. These are of various sorts of leather, but may be roughly divided into those with rough grained surfaces and those with smooth surfaces. The former are treated like upholstery leather; the latter, such as suit cases, attaché cases, leggings, etc., generally of pigskin, may be washed with saddle soap, a commercial preparation. Brown boot polish may be used for polishing.

Crocodile Shoes. These may be cleaned with good white or brown boot polish.

Snake, Lizard and other fancy skins should be cleaned with the special preparations available.

CHAPTER XIV

BROOMS AND BRUSHES AND OTHER CLEANING EQUIPMENT
TOILET BRUSHES AND ACCESSORIES

GOOD results cannot be obtained with dirty implements, and the housewife is wise who examines the condition of her cleaning equipment, and keeps it free from dirt. The daily care of brushes and brooms has already been touched upon ; below are suggestions for thorough cleaning.

BROOMS AND BRUSHES. General Procedure. If the supply of warm water is limited, and the washing is done at home, the water from the copper after all the clothes have been boiled will be found very useful for the household brushes. This must, of course, be cooled down before using. Otherwise, use warm, soapy water, adding a small lump of soda for very dirty or greasy brushes only. It may be used for blacklead and boot brushes, when necessary.

It is easier to wash brushes out of doors than in the scullery ; and a good drying day is desirable. A bath, large enough to hold the broom-head, will be required.

Remove all fluff, if any.

Clean wooden parts according to the nature of the finish.

Wash the brushes by beating up and down in the soapy water till they appear clean. If many are being done at once, it is advisable to leave the fibre ones till last, as the water, being cooler, is less likely to cause softening. These may, however, be previously steeped in cold water and salt.

Rinse in warm water to remove soap, and then in cold water ; bass and fibre brushes are stiffened if well rinsed in cold water containing salt (1 tablespoon to 1 quart). Brushes used for wet work should be rinsed well after use, as soap causes them to deteriorate.

Shake the brushes well to remove moisture, and hang to dry in any airy place, so that the water does not soak into the wood and soften the fixing. It is preferable to hang them heads down, on a line ; or, if drying indoors is necessary, across two chairs.

All broom-handles should be quite smooth ; if they start to splinter they may cause injury to the hands, and should either be rubbed down with sandpaper and repainted, or renewed altogether.

CARPET SWEEPERS. These should always be emptied after use. To do this, press the spring which opens the doors, and empty over a newspaper. Remove any cottons, etc., adhering to the brushes ; wrap up and burn the dust.

The removable brush will from time to time require washing.

This is done as described on previous page. Advantage would be taken at this time of the opportunity to clean the interior and other parts, according to the material of which they are made.

VACUUM CLEANERS. The removal of the dust bag differs with each kind of cleaner, and directions given should be carefully followed, and thedust burnt. Occasionally the cleaner should itself be cleaned.

POLISHING MOPS. Mops used for dusting as well as for polishing require washing occasionally. Some of these unhook from the frame for washing, and others are removable from the handle. The task is not a particularly easy or pleasant one, but the following method is successful—

Steep about half an hour in half a bucket of hot water containing 2 tablespoons of soda, stirring occasionally. This will loosen and remove much of the dirt.

Remove, and wash in fresh hot water containing the same amount of soda and enough soap to form a good lather, beating up and down as for brushes. Repeat in a fresh lot of water if necessary.

Rinse very well and hang up to dry.

When thoroughly dry, the mop may be impregnated with a polishing oil, in the way indicated on the container. It may be done by standing the mop in a tin in which the oil has been sprinkled; by soaking the pad at the top, or in some cases by pouring on to the metal frame which contains holes through which the oil passes to the fringe.

TOILET BRUSHES AND ACCESSORIES. Practically all good toilet brushes are made from the bristles of the Russian boar, sorted according to stiffness. The softer brushes are made from the ends of the longest bristles, the part nearest the body being thicker and stiffer. Bristles from the mane and tail are also coarser than the body bristles, and are used for harder brushes.

Hair Brushes are made by wiring in the loops of bristles, and covering the back with polished wood, silver, or other ornamental covering. *Whalebone,* finely split, is used for some very stiff hair brushes; it is cheaper than bristles. *Pneumatic* brushes have the bristles fewer in number and mounted on a little rubber cushion, which yields to the movement of the brush when in use. As good a quality of hair brush as possible should be bought, as it gives far better and more satisfactory wear. The best bristle brushes are often the natural brownish tint, unbleached; and it is advisable to put money into bristle rather than an ornate back.

Care and Cleaning of Toilet Brushes. Brushes should be freed from hair after use, and kept away from dust in a bag or cover.

Wash only when necessary; wiping the bristles frequently with a soft clean cloth or tissue paper will help to remove grease and keep them clean longer.

To Wash Toilet Brushes. Silver, tortoiseshell and ivory backs should be cleaned before washing; ebony and varnished wood backs should be smeared with oil (linseed or olive) to protect them from water during the washing.

See that the brush is free from hair before washing; this is done in warm water containing a little ammonia (about ½ teaspoon to each pint of water is an average amount) and sufficient soap to lather. Wash by beating gently up and down, but avoid wetting back and handle as far as possible.

Rinse in warm water to remove soap, and then in cold to stiffen the bristles. Salt may be added to this (about 2 teaspoons to 1 pint).

Remove surplus water by shaking the brush well, dry as far as possible with a cloth, then place in a current of air to dry, so that the brush is not resting on its bristles and that no water can soak into the back. If the bristles are distorted while wet, they will retain the position until re-washed and, meanwhile, are liable to get broken off. Water soaking into the back may cause the bristles to loosen and may rot the wood.

The best way to dry a brush is to tie a string round the handle and hang it up. Hot places should be avoided, as heat may make the bristles yellow and brittle, and may warp the wood.

When dry, varnished backs may be polished with furniture polish or linseed oil; ebony may be rubbed up with linseed or sweet oil; the ones previously cleaned will require rubbing up after drying.

Tortoiseshell may be cleaned with a small amount of jeweller's rouge.

Ivory. Wipe over with warm borax water (1 teaspoon to a pint). Soap should be avoided, as it turns ivory yellow. Discoloured ivory may be cleaned by applying a cream of whiting and turpentine; allow this to dry, then well polish. If neglected, leave the paste on for some time; whiting and lemon juice can be used in the same way.

Piano Keys may be similarly treated when yellow, but care is required to prevent moisture and whiting getting between the notes.

Combs. These are of various substances, from xylonite, and a preparation made from dried casein, to horn, ivory, and tortoiseshell. A good quality in any make should be bought; cheap ones break very easily and the teeth are often very sharp and uncomfortable to use. No comb is improved by washing, and as it is very necessary to keep them clean, they can receive a dry cleaning weekly, and be washed about once a month.

To Dry-clean Combs. Protect the table with paper.

Wind strong cotton or fine twine between the middle finger and thumb of the left hand, and insert this between the teeth of the

comb in turn. A comb cleaner made of several strands of cotton may be bought.

To Wash Combs. Use the same water as for the brush, and a nail brush to clean between the teeth.

Wash quickly, and do not allow the comb to remain in the water longer than necessary, as this may injure it and cause warping and breaking.

Rinse well and dry with a cloth; place in a current of air to finish drying, and afterwards rub it up with a soft cloth.

Nail and Tooth Brushes. These should be purchased in a good quality only, as in cheap ones the fibre used is soft, and, not being firmly fastened in, will drop out very quickly. When new, steep in cold water for some hours before using, which helps to prevent bristles coming out quickly. As soon as bristles start coming out in a toothbrush, a new one should be bought, as there is danger of their penetrating the gum. Both nail and toothbrushes require rinsing after use to remove traces of soap or powder, which clog the bases if left in, and prevent drying. They should be allowed to dry uncovered, and in such a position that water does not soak into the stocks. Toothbrushes may be disinfected occasionally by steeping in a solution of Sanitas or other disinfectant (about 1 tablespoon to half a pint of water).

Clothes Brushes. These are of various degrees of stiffness, according to the purpose required. For brushing coats and skirts, a fairly stiff brush is required, but hats need a rather soft one. They may be washed when necessary in the same way as hair brushes, the ammonia being omitted. There is often difficulty in getting rid of all the fluff at the base of the bristles; this can be lifted up carefully with a pin.

Toilet Sponges belong to a large group of sea-living organisms, which form a tough network of cells; this skeleton, or network, is left when the soft parts die, and forms the porous masses known as "sponges," which have a great capacity for absorbing water. They are found in all parts of the world and are very various in shape and size. Sponges vary considerably in texture, the softer and finer ones being selected for toilet use. Care should be taken to see that the whole sponge is bought; cheap varieties are sometimes only a portion of a large one, and will quickly disintegrate with wear. The natural colour is a brown shade; very pale sponges have probably been bleached and thereby weakened. Those in which the holes are fairly small and even in size give the best wear.

Care of Sponges. When new, there may be some sand left in them; steeping in cold water for some hours generally removes this.

Using soap on a sponge makes it slimy. After using rinse in cold water, squeeze and keep in an airy place to dry.

Slimy sponges can be cleaned by steeping them in either—

Salt and water (1 tablespoon to 1 pint); or
Vinegar and water (4 tablespoons to 1 pint).

Steep in one of these, squeezing occasionally, till the sliminess is removed. If the water becomes cloudy, use a fresh supply. Rinse well in clean, cold water and dry. This method may be used also for washing-cloths which may have become slimy from insufficient rinsing after use with soap. If sponges begin to tear, they may be mended by running cotton throughout, which will hold the material together, and will not be noticeable in use.

Indiarubber Sponges are useful, as they do not become slimy with soap, but they tend to break off in minute particles on the person using them.

Loofahs are frequently used; they make excellent friction gloves, and can be used with soap. They are the fibrous seed-pod of a plant, and can be bought either in the natural tube-like form, or cut up and attached to towelling as a washing glove. They wear well and can be washed, if necessary, like sponges.

Indiarubber Hot-water Bottles and other articles of rubber, e.g. wringer rollers, often become very discoloured by dirt and grease. Turpentine applied on a rag will speedily whiten them. After this wash in soapy water and dry.

Care of Hot-water Bottles. These become stretched and weakened if hung up without emptying. They also crack and leak if dried near a fire, or other hot place, and last longer if filled with hot, *not boiling*, water. After filling, the stopper must be screwed in well, or the bottle will leak, and it should never be filled quite full, owing to danger of bursting. Rubber bottles stored through the summer are apt to become hardened and to crack. To prevent this, leave in a little air and water when putting away, and from time to time change the latter. The washer will require renewing yearly.

CHAPTER XV

LAMPS, STOVES, AND BOILERS

LAMPS require cleaning each time after use. Where oil is the only means of lighting, it is a good plan to have all the lamps collected on a tray kept for the purpose, where they will be ready for cleaning; this operation should be carried out in some place where there is no fire. A box for cleaning apparatus will be kept handy, containing rags, soft paper, matches, an oil funnel or oil can with spout, lamp scissors, and a chimney polisher. Proceed as follows—

Remove globes or shades, dust and put aside.

Remove chimneys; polish well, inside and out, and put in a safe place. (The glass is attended to before the hands come in contact with oil.)

Turn up wick, and with a piece of soft paper remove any charred part. Any loose threads may be cut with the scissors, but it is unwise to use them in place of the paper, as it is difficult to cut evenly, and an uneven edge causes smoking, therefore they should be used as seldom as possible. See that the wick is sufficiently long to be thoroughly immersed in the oil.

See that air holes are clear; if not attended to they become blocked, and the light is bad.

Fill the reservoir about three-quarters full of oil, by means of a funnel or a small oil can, to prevent spilling. Some lamps are filled at the opening where the burner is screwed in, others through a small hole in the reservoir, closed by a screw top. Sometimes these latter have a small float, which rises to the top when the oil is at the correct level.

Carefully wipe the whole of the exterior to remove any paraffin.

Replace chimney and test the wick. Put on the shade, and place lamp on a shelf or table kept for the purpose. Wipe tray if necessary.

Special or Occasional Care. If a lamp smokes or gives a bad light, or is unpleasant in any way, it may be thoroughly overhauled as follows—

The globe and chimney may be washed like table-glass, but must be very thoroughly dried in a warm place for some hours before use, or they may crack when the lamp is lighted. This applies also to all globes used for gas or other lighting, except electric light.

The wick, if unsatisfactory, may be cut shorter, so that a fresh burning surface is exposed. If it is very short and no new wick is at hand, a strip of flannel may be tacked on to the reservoir end,

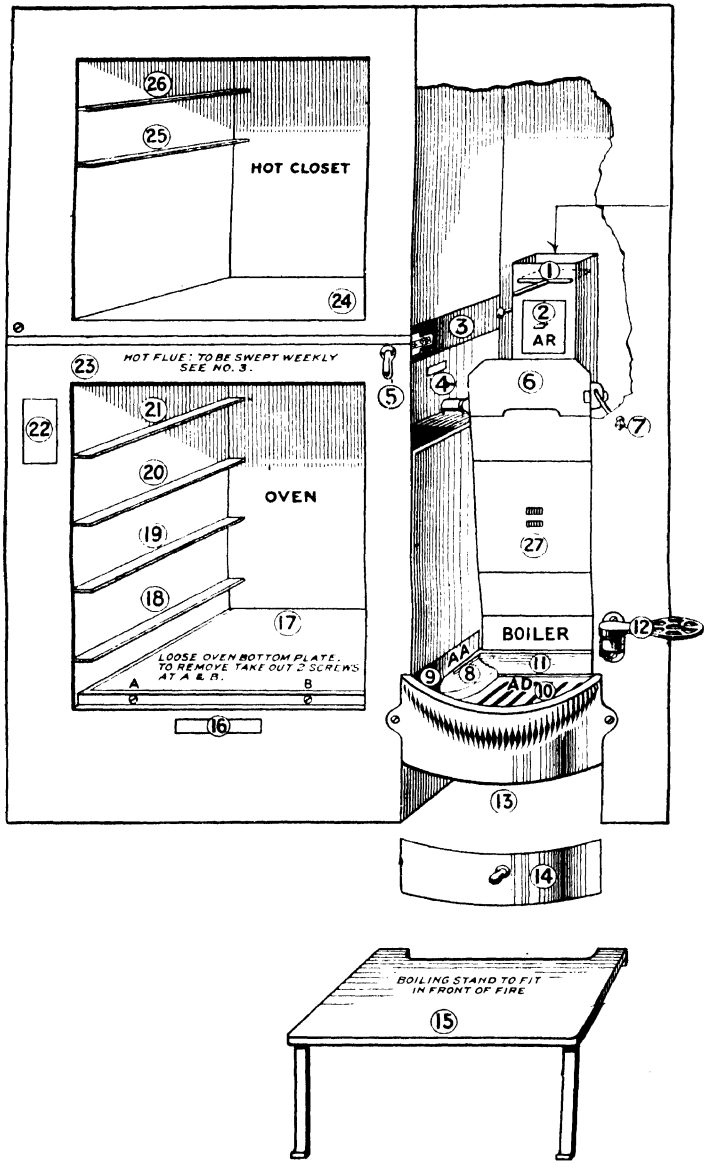
and so lengthen its life; it must, of course, be renewed entirely before the join reaches the burner. Boiling in soda water, rinsing, and thorough drying is recommended to clean the wick, but this is scarcely worth the trouble as new wicks are very cheap. When putting in a wick, see that it is perfectly level. The round wicks need special care in this, as they are more difficult to adjust than flat ones.

The reservoir itself may require cleaning out, especially if the oil used is not of the best quality, and has left a deposit. Empty out any oil, and rinse the reservoir with a little fresh oil. This, with the remains previously emptied, can be bottled and kept for cleaning purposes. Wipe out the container as clean as possible with old rags, and fill three-quarters full with fresh oil. It is not advisable to wash with water, as any left behind will cause sputtering and trouble when the lamp is burning.

Metal parts in contact with the wick may be cleaned if very dirty by boiling in soda and water, rinsing, and drying thoroughly. This process, however, tends to wear away the brass, unless it is of very good quality. If they can be kept clean by wiping with paper, so much the better, as the water in them may not be absolutely removed, and it is never advisable to associate oil and water. They may be washed, of course, if very thorough drying follows.

The outside may be cleaned, according to the material of which it is made.

STOVES: Coal Range. The principle of heating a coal range by means of hot gases from the fire passing over or under the various parts of the stove applies to any make of range. The actual regulation of these through the passages or *flues* is carried out by means of metal plates, or *dampers*, which by opening or shutting allow the hot gases to pass to any desired part of the stove. The actual arrangement of dampers varies with the make of stove. In the ordinary coal range the combustion of fuel is incomplete, and a large proportion of carbon is set free in the form of soot; if combustion were complete this carbon would be converted to carbon dioxide, and no soot would form. This soot is deposited along the whole length of the flues, and makes a covering of non-conducting material, which prevents the penetration of heat. Flues choked with soot do not allow the ovens or hot plate to get hot, therefore they must be kept free from all such deposits. The frequency with which cleaning is necessary depends on the amount the stove is used; the kind of coal—some coal makes more soot than others; whether a small or large fire has been burning; whether the range is small or large—a small range will require cleaning more often in proportion than a large one. Generally speaking, where the range is in daily use, but not a great deal of cooking is done, cleaning the flues once a week is sufficient, but



By courtesy of *Triplex Foundry Co., Ltd.*

FIG. 62.—DIAGRAM OF TRIPLEX STOVE, AND INSTRUCTIONS FOR CLEANING.

KEY TO FIG. 62.

1. Boiler damper.
2. Soot Cap. Remove to clean boiler flue when necessary.
3. Oven damper. Sweep top of oven flue here (23).
4. Oven ventilator.
5. Oven damper handle. Turn towards canopy to heat oven.
6. Hinged flap. Close down to heat oven or water quickly. Keep open for economy.
7. Handle for No. 6 flap.
   Push in to open. Pull out to close.
8. Oven flue inlet. Care should be taken to see that the fuel is covering this flue when cooking.
9. *AA* = oven cheek.
10. *AD* = bottom grate.
11. Flue under boiler; clear out daily and see that rake goes through to the back flue.
12. Swing trivet.
13. Ashpit. Never let ashes accumulate here; they destroy the bottom grate *AD*.
14. Ashpit fret. This must be closed when cooking or heating water.
15. Boiling stand to fit in front of fire.
16. Rake out soot here after brushing 22 and 23.
17. Heat irons. Fry bacon and boil saucepans on oven bottom.
18. Use 18 for bottom heat.
19. To bake meat, place the shelf on either of these shelf rests.
20. Use for baking large cakes; and when brown and well risen, but not cooked through, place the iron baking sheet on 19.
21. Use for browning.
22. IMPORTANT.—
    Oven soot cap.
    Sweep flue here up and down every week.
23. Top of oven flue.
24. Hot closet bottom plate.
25–26. Slides for shelves. Warm plates and dishes.
27. Lift off lid for giving access to boiler for plumber's use only.

To Light Fire. Open boiler damper (1) a very little way; open hinged damper at back of canopy (6) and remove ashpit fret " H.Y." (14) to create a strong up-draught through fire. Close oven damper. When fire is well alight, close fret " H.Y."

How to Make Up Fire. Build up fire with small cobbles or nuts enough to cover the boiler and oven flues; then cover this with small slack and dust. Always put coal on at back of fire and keep the oven and boiler flues well covered to prevent cold air being drawn into the flues over the top of the coal. Do not poke or disturb the fire. To increase the heat, lift up the red part of fire with a poker and stoke as described above. Never push coal under oven (8) or boiler (11). Do not make up too big a fire—just enough to cover the flues is quite sufficient, and add fuel a little at a time.

Hot water all night can be obtained if fire is banked up with slack last thing at night.

Coal Hod. Use one with a flat bottom to shovel up slack each time.

experience will decide in all cases how often it should be done. Below are given suggestions for the daily and special care of the range.

Daily Care. The daily attention to the stove should be carried out before sweeping or dusting, as a certain amount of dust will be caused, though this can be reduced to a minimum by careful manipulation.

The hearth-rug having been removed, protect the floor by paper or a hearth-cloth. Collect all the necessary articles for tidying the grate and laying the fire. A housemaid's box is convenient for keeping blackleading materials, old gloves, wood, and paper. Ashes and cinders may be carried away in the lower part of the box for sifting.

Remove carefully the cinders and ashes. In some grates there is a cinder sifter below the fire box; by gently working with a poker or coal rake the ashes can be divided from the cinders; the ash box can be carried away bodily and the cinders removed. If there is a back boiler, all cinders should be cleared from under it, or the water will not get hot.

Brush over the ovens to remove soot, and brush the whole range free from dust. Clear up the hearth and lay the fire. A few of the largest cinders are placed at the bottom of the grate before the fire is laid. The remainder, after sifting where necessary, are useful for making up the fire when great heat is not required. Some of the finest ashes may be kept for scouring; the rest are put in the dustbin.

Any grease spilt on the stove should be removed, and if the grate requires blackleading, this should be done. Generally, a brush up with the blacklead polishing brush is all that is necessary, except for those parts which come in contact with the greatest heat, which will have to be blackleaded.

Rub up fireirons and any steel parts of stove, and tidy the hearth.

Weekly Cleaning of the Flues. This is done after the dead fire has been cleared out. Every make of stove gives full directions for cleaning the flues, and these should be fixed permanently in a prominent place for easy reference. They should be carefully and accurately followed, but a few general hints may be found useful.

The kitchen should be protected as much as possible, anything that will catch the dust being removed, and a dust-sheet being placed over the dresser. The hair, clothes, and hands of the worker also should be covered, and the floor protected by paper or a piece of hessian.

A paper-lined pail will be found useful for receiving the soot.

The flues are reached by removing the small doors visible in various parts of the range. Beginning at the highest, and having only one door open at a time, brush out the flue well, both up and

down as far as possible. All the dampers should be shut except that of the flue being cleaned.

Clean each flue in turn, brushing the flue doors over a paper to clear them of soot, and replacing when each flue has been brushed. Brush over the ovens, and send the soot to the outer side, where it will fall to the bottom. It is removed from here by the small door under the oven, and raked straight on to a newspaper, dustpan or shovel.

When all the soot has been removed, it should be gathered up in the paper and placed in the dustbin, or used for the garden.

Finish the stove by removing grease, etc., blackleading, laying fire, and cleaning the hearth.

With sitting-room fires, there is no actual flue to keep clean, but the entrance to the chimney should be kept as free as possible from soot.

On pages 37 and 40 are two diagrams showing the direction of the flues in different types of cooking ranges.

Management. Although the efficient working of a range depends on the consumption of an adequate amount of fuel, this is often unnecessarily increased by extravagant use and ignorance of proper methods of stoking. The following hints for management will be helpful—

Where the range has an adjustable bottom, this should be placed at the height advised by the makers. For all ordinary cooking purposes, except for roasting in front, where a good surface of hot coal is required, the smallest fire possible is generally recommended, that is, the grate should be in the top notch. It is very seldom necessary to move the grate down to the lowest position, and a arger fire means a much greater consumption of fuel.

When starting the fire, it is generally necessary to pull out all the dampers to create a draught, but when once the fire is going well the dampers should be regulated as required ; if all are left open to the fullest extent the fire will rapidly burn away, and require re-stoking much sooner than necessary. All the dampers should not be open at once, or this will again cause more rapid and less complete combustion. When the water is hot, the heat may be turned in another direction.

When cooking is to be done, the fire should be well made up ; and, when coaling, bring the hot coals to the front, and against the oven, and place the fresh fuel at the opposite side. This prevents the cold coal cooling the oven and top by contact.

When the fire only needs to be " kept in " after cooking, it may be banked up with vegetable parings, cinders, or coal dust. An anthracite stove, kept in all the twenty-four hours, only requires the ashes to be shaken out at the bottom, with the shaker provided. The flues are cleaned in the usual way, though the deposit is only a slight amount of fine dust, not soot.

Cleaning of an Independent Boiler. This is cleaned in the same way as an anthracite stove, the ashes being shaken out at the bottom early in the morning. About once a week, the fire is allowed to go out, and the fire-box is raked out, the flue brushed, and the fire restarted.

GAS STOVE. This, though requiring less cleaning than a range, nevertheless must receive due attention in order to perform its work satisfactorily. An oven left greasy and dirty causes smoking and an unpleasant smell when used again, owing to the decomposition of the organic matter ; the same applies to material spilt on the hot plate.

Daily Care. Keep free from grease, removing at once any spilt on it.

Avoid clogging the burners by allowing food to boil over, and wipe out oven after use.

Rub up bright parts frequently.

Special Care. This necessitates a thorough cleaning of all parts of stove.

Remove all loose parts from hot plate and oven and remove any grease with plenty of newspaper. Clean burner holes with a knitting pin. They are not blackleaded, but those from the hot plate may be rubbed well with a little paraffin.

Wash the oven interior, scouring if necessary, and dry thoroughly. The exterior, if black, may be polished with floor or boot polish ; if enamelled, with a clean dry cloth after wiping down. Clean steel or brass in the usual way, but only rub nickel or chromium finishes with a dry cloth.

Hints on the Management of Gas Stoves. Attention to the following points helps to avoid waste of gas—

Use the size of burner most suited to the purpose, e.g. for stewing and other processes where little heat is required, use a small burner.

Do not turn up the gas high enough for it to flame round sides of pan ; this wastes heat.

Have the bottom of all pans, etc., used on the stove perfectly clean and free from soot. Choose those made of good conducting material.

Do not boil more water than is required.

Turn off the gas at once when finished with.

One gas-ring may be used to keep several pans at boiling point, especially if a sheet of tin is placed over the burner to spread the heat.

Do not use the oven for cooking one dish only ; plan work so that a good deal of baking can be done at one heating of the oven. Remember that food continues to cook slowly for 10–15 minutes after the gas is turned out.

To light the oven, insert taper before turning on the gas, and begin lighting at the back. Heat the oven 15–20 min. full on before use.

and on inserting the food turn down the gas and keep low during the cooking. The oven does the cooking, not the gas. In the case of automatically controlled cookers, set the dial to the required point before lighting, and wait until the gas has gone down (15–20 min.) before using the oven.

Do not keep water in the drip-tin in any gas oven.

ELECTRIC STOVES. As electricity is a clean fuel, less attention is required by an electric stove than by a gas or coal range. The top is generally of nickel or highly-polished steel, from which any spilt material should at once be removed by wiping with a damp cloth. It may be polished occasionally with whiting. The inside and outside of the oven may be wiped with a damp cloth, care being taken not to allow water to reach the heating elements, as these may fuse.

OIL STOVES—WICK. The ovens require to be kept clean and free from grease ; the exterior, which is generally japanned, can be wiped with a damp cloth, dried, and polished if desired. The lamps are trimmed in the same way as table lamps.

PRESSURE STOVES. All wickless stoves must have the fine nozzle cleaned regularly by means of the small cleaner provided ; the outside should be kept free from oil, and any washers renewed when necessary, in order to prevent leakage.

ALL COOKERS are best cleaned out while still warm, as the splashed grease is then more easily removed.

CHAPTER XVI

LAYING AND CLEARING MEALS: WASHING-UP

LAYING THE TABLE FOR MEALS. It is a well-known physiological fact that food eaten under pleasant conditions, in a cheerful frame of mind, is more beneficial than elaborate food indifferently presented and eaten in gloom. A simple meal, served in an attractive setting, gains enormously in value, because the pleasant feelings engendered at the sight of a dainty table stimulate the appetite, and thereby set the first digestive juices flowing. These juices, known as the psychical secretion, because started in the first place by sight, smell, or taste of food, are most important in digestion, as they begin acting upon food at once, until the second, or chemical, secretion starts, which is slower than the psychical juices. If the flow of psychical juices is stopped in any way, as by anger, weariness or depression, digestion is slower, and less beneficial in a way, as cheerfulness stimulates the necessary blood-flow, while depression tends to reduce it, thereby lessening that feeling of content and well-being essential to enjoyment. This discourse on digestion is by way of showing the physiological and psychical reasons for a well-laid table. Nothing is so cheering to a tired person as a table, however simple, with clean white linen, polished silver, china and glass, all neatly and tastefully set out.

The actual laying for a meal varies with circumstances and with the kind of meal, but for all the observance of the following points makes for a well-laid and an enjoyable one—

Clean, comfortably warm, well-lighted and ventilated room.

Bright silver, knives, glass, and china.

Clean cloth or table mats, and clean, well-filled jam jars, marmalade pots, etc.

Neat and well-filled cruets within easy reach.

Preparation. The materials for the table will, of course, depend on the kind of meal, the number of courses and the number of people to be served. All the requisite silver, etc., may be collected on a tray; pepper, mustard, and salt cruets should be filled. Mustard is best made in small quantities, as it dries quickly; make in a cup, mix to a cream with milk or water, till it just drops from the spoon, and put carefully into mustard pot to avoid smearing the sides. Salt should be dry and smooth, and the spoon laid across it. Silver salt cellars, unless lined, are better if emptied after use, as the salt, if damp, causes greenness to appear, due to the copper contained in silver. Bought table salt contains a filler of ground rice or some other starchy substance, which keeps it dry, but

block salt is cheaper, and can be made fine and dry by warming thoroughly in the oven, dividing in half, and rubbing the two lots together, when it will powder. This will require a little more crushing and sieving to make it quite fine, and can have ground rice added (about 2 oz. to 1 lb. salt), be well mixed, and put in tins.

Laying. Polished tables may be entirely covered with a cloth, or have only table-mats. The latter method is only pleasant on very well-polished tables, and then looks very attractive. Where they are used, the mats require some heat-resisting material under them, to prevent marking. Round mats are provided for plates, side-plates, and glasses or cups; oval ones for dishes, and generally a centrepiece to match.

Where table-cloths are used, a polished table requires a " silence " cloth, either a piece of felt or other thick material, or an old table-cover, tied to the legs by tapes, or, for circular tables, an elastic run round. It serves to protect the table from heat or spilt liquids, and to deaden sound. Over this is placed the table-cloth, which looks best if kept free from creases; it should be of medium stiffness, the folds quite straight and even, and the sides should hang down 12–18 in., according to the width of the table.

Table Napkins, if clean, are placed in the centre of the place, either square or in a fancy fold. When used more than once, it is customary to keep them in a ring and to place them on the left-hand side of the user.

The Service Waggon or *Sideboard,* or both, should have a white cloth and carry extra servers and any dishes which are to be helped from the side.

Table Decorations are attractive; they should be low enough to allow of conversation across the table, and are most effective when not too abundant.

The Cover, or Place, for each person should occupy at least 20 in., and leave room between the knife and fork for a large plate. The number of knives and forks required depends on the number of courses; the ones to be used first being placed on the outside. Their handles should make an even line parallel with the edge of the table, about 1 in. in. If there is no special soup spoon, a tablespoon is placed on the outside right for soup. For luncheons and simple dinners, where serving is done at the table, all equipment for serving must be placed on the table.

Servers and Carvers and *a Steel* are placed on each side of the carver; the table-cloth is protected with a carving cloth, and knife rests of glass or metal may be used. *Tablespoons* are placed across the corners of the table, with cruets near or between them. It is very general at the present time to serve dinner *à la Russe*; here, all carving is done at the side, and the dishes handed round, the diners helping themselves. Carvers, therefore, are laid on the sideboard instead of on the table.

Water, butter and other articles for general use are put within easy reach. *Bread* for luncheon, supper, or dinner is placed at the left hand, generally on a small plate, and is cut in squares of about 3 in., and ¾–1 in. thick; more is kept on the sideboard for use as required. Small dinner rolls often take the place of bread. *Butter* is more attractive if rolled, or otherwise presented, in small portions. Bread for breakfast is usually cut at the table, and for tea thin slices of bread and butter are generally served.

Glasses are put on the right side, a little above and to the right of the knives. A glass for each kind of wine served will be required, but generally only two besides the tumbler are put on the table, to the right of the tumbler, the taller one at the back, the others being brought on as required.

Tea and coffee sets are generally on a tray, with the cups ready for pouring out. The handle and spoon are arranged to the right, for ease in use when handled.

Waiting at Table. Good waiting at table should be quick, quiet, and efficient. If there are several waiting, it is so arranged that they shall not get in each others' way, and in all cases the waiting is carried out with a view to the comfort and convenience of the diners. There are certain points it is customary to observe in waiting.

The waitress is neatly dressed, with clean hands and apron, and a clean table-napkin across her arm for holding or wiping dishes. She must move quickly and quietly and should be oblivious of the conversation at table.

A full knowledge of the menu and the wines and glasses to be used is essential, also a knowledge of the order in which diners, if guests are present, are to be served.

The waitress is responsible for cleanliness throughout the meal, and should be on the look-out for any plates, etc., requiring wiping before being placed on the table. A supply of extra plate, glass, and china should be at hand if required.

Where there is one waitress it is customary to serve and clear from the left side of diner, but where there are more, clearing is generally done on the right to avoid confusion. Wines, etc., are served on the right, and glasses are not filled quite full.

When carving is done at table, the waitress stands on the left and slightly behind the carver, ready to remove the plates. When handling vegetable dishes, etc., she should hold them by the base and not by the sides.

After each course, plates are removed before the joint or other dish, carving knives and forks being placed on a plate or salver before taking the dish, to avoid accident. Arrangements should have been made beforehand for removing all used plates quickly and quietly, and for taking them from the room. For knives and silver a zinc-lined basket is useful.

Crumbs, unused silver, cruets, and all glasses except those for port, are removed before dessert. The dessert plates, carrying a finger bowl and a dessert knife and fork, are placed before each diner ; dessert is put on the table, and the waitress withdraws.

CLEARING AWAY AFTER MEALS. This should be arranged in such a way as to avoid unnecessary journeys, and done as quietly and quickly as possible. The following is a logical sequence—

Remove all food.

Pack up plates on service waggon or sideboard, scraping all bits on to one plate, and putting knives and silver into box.

Remove glasses or cups ; the latter may be packed up on the tray.

Take off unused silver, knives, etc., and put away any articles which are kept in the dining-room.

Remove crumbs carefully ; if tray is held on the table, not beneath the edge of it, fewer crumbs will get brushed on to the floor.

Fold up cloth neatly in its folds and put away.

Take up any crumbs from floor, air the room, and make up the fire, if necessary.

WASHING-UP : Preparation. Orderly arrangement in washing-up greatly accelerates the operation. Before beginning, the following preparations will help—

See that there is an adequate supply of dry towels ; a separate one for glass, of a lintless material, is necessary ; and one for knives.

Plenty of hot water. If there is none in the tap put on kettle while making preparations.

Remove any food on to kitchen plates before putting into larder. Scrape all bits from plates and arrange in piles, according to cleanliness and kind. Plates may be soaked in cold water for a time first. Empty dregs from cups and teapots.

Put knives to steep ; if greasy, wipe first. Steeping can be omitted if they are not very soiled.

Steep spoons and forks in hot water, but avoid scratching the spoons with the forks.

Steep milky and starchy utensils in cold water, and greasy utensils in hot water and soda ; greasy saucepans can be put on to the stove with soda to boil up.

If washing-up is not to take place at the sink, a bowl for washing and a tray for draining will be necessary. A second tray to receive dried articles would be found useful.

Washing-up. Prepare the water, with a little soap powder or soda in it. Soap may be rubbed on the cloth or mop. The best results in washing-up are got by having the water as hot as possible ; boiling water, uncooled, or only very slightly cooled, will go a long way, and wash things more quickly and cleaner than cooler water, and china will dry almost at once when put to drain, and with a

good polish. A dish-cloth, of course, cannot be used, but a washing mop prevents scalding, and a little experience will teach the easiest method of manipulating the crockery to prevent scalding the fingers of the left hand. Less soap, soda, or soap powder need be used with very hot water.

The cleanest things are washed first ; the usual order starts with glass, then silver, china, knives, tins, and pans. If, however, very hot water is used, glass cannot, obviously, be washed first. If the glass is not greasy, it may be washed in cold water, either first, or afterwards ; or more water can be put on while the other washing-up is done, which will be used for the glass, and for washing through the drying and dish cloths and rinsing out the bowls. This lot of water need not boil, but should be hot. Assuming that boiling water is to be used, the order of washing is as follows—Silver (which should be wiped at once, when it will dry with a good polish), china in order of cleanliness, then the cooking utensils, tins, and saucepans.

Wash one article at a time, and pay special attention to difficult parts.

Use salt, ash, or other abrasive for burnt dishes.

Change water when necessary.

Drain well before drying, especially glass if washed in cold water.

Dry thoroughly, if there is no plate-rack, with a polish, and put all tins and metal-ware to finish off in a warm place before putting away.

After everything has been finished, wash out dish-cloth and mop, and rinse and dry the bowl ; once a day the tea-towels should be washed through, and hung up to dry ; they will require boiling once a week. Attend to sink, pipe, etc., and leave everything clean and tidy.

After drying, all articles are replaced in their proper places.

Plates and dishes dried in a plate-rack are sometimes dull and smeary. This is due to insufficient rinsing, or rinsing in warm water. Rinsing in very hot or quite cold water allows plates to dry up well, but they generally require a rub with a cloth before using again.

CHAPTER XVII

DAILY AND WEEKLY CLEANING OF HOUSE: SPRING CLEANING

DAILY CLEANING. It is always easier to keep things clean than to make them clean when they have become very dirty. Moreover, the cleaning of very dirty articles is necessarily more wearing to the materials and consumes more time than should be necessary. In order, therefore, to save future work and to preserve one's surroundings in a comfortable condition, the whole house should be subjected to a certain amount of cleaning daily. The daily work of the household consists in removing surface dust, tidying up generally all rooms in daily use, and in keeping clean and bright any special materials and articles of metal or wood. By common consent, housework is got through as early in the day as possible, not only because the actual process is unbeautiful in itself, but so that the occupants can be living in clean and tidy rooms. Another reason for doing housework early is the fact that during the night much of the dust kept floating about by movement of air and people will have settled, and so can be more completely removed than if left till stirred up again. Without suggesting that any hard and fast rules can be laid down for routine, the following scheme of work may be found helpful—

Airing. Flooding the house with fresh air as early in the morning as possible should be regarded as the first duty of a worker after rising. This somewhat broad statement must, of course, be modified to suit each case, but in general it should be carried out as completely as possible. The reason is twofold: it allows the stagnant air which has been kept in the house all night to be replaced with fresh air from outside; and the air, in towns especially, is always freshest and purest before the lighting of fires and stoking of furnaces in the morning has had time to pollute it with fresh volumes of soot. Bedroom windows, of course, will have been open all night, but in the early morning the house doors and living-room windows should all be opened, unless there happens to be a gale blowing, or any other urgent reason against it.

Daily Work in Each Room may then proceed along the following lines—The first point is attention to anything which may tend to cause dust, e.g. the cleaning of the fireplace, cleaning the grate and relaying the fire. Sweeping follows, upholstered furniture, etc., having been protected; stairs and passages, and the house steps are also swept.

While dust is settling, rugs may be shaken out of doors, replaced, and any necessary tidying done.

Dusting as far as can be reached, while standing on the floor, is generally considered sufficient for daily work, and this may be followed by any rubbing-up or polishing of brass, linoleum, polished surrounds, etc., considered necessary. The actual amount of cleaning to be given to special articles such as the bath, lavatory basin, doorstep, etc., can be decided only by the worker.

It may be noted that considerable assistance is given to the worker if rooms are generally tidied overnight; and if papers and books are put away by the users.

Daily Work in the Bedroom follows the same general lines, but there are one or two important points requiring notice—

Unless the rooms are provided with fixed lavatory basins, or the occupants use the bathroom, a good deal of attention is required by the washstand, which it should receive as early as possible. Waste and dirty soapy water are most undesirable in a room, as they rapidly begin to decompose and give off bad odours if left long, and in any case make thorough ventilation impossible.

For the worker, a can of hot water, slop pail, and cloths are necessary, these being a ware-cloth, chamber-cloth and glass-cloth; but where glass is brought down to the kitchen or elsewhere for washing only two cloths will be necessary. These cloths should be clean, and should be clearly marked for their particular use; care should be taken to keep them quite separate during use. The following order of work may be recommended—

Empty contents of chamber into pail, and the water of basin first into chamber, then into the pail. Empty water bottle, and if stained remove for further cleaning.

Pour hot water into basin and chamber, and add soda every week to the latter. Rinse tumbler in basin and any other ware such as soap dish, and dry; and rinse out and dry basin. Before replacing basin, wipe top and back of washstand and water jug.

Fill jug and water bottle, empty chamber, rinse and dry.

After emptying the slops, flush out the pan and rinse the slop pail (it may be brushed round also with a pan brush); wash out the chamber-cloth in it and hang up to dry; the pail itself must be kept dry, and scalded weekly. It is a good plan to stand it upside down when not in use, as this prevents any moisture from settling into the joins at the bottom, where rust readily accumulates. The ware- and glass-cloths should also be rinsed out and dried. All the cloths should be boiled once a week.

The Bed. Before breakfast every member of the family, including children old enough to do so, should strip the bed and leave night-clothes airing. The bedclothes should be removed separately, each one folded lightly on two chairs, so that nothing touches the ground. The mattress should be arched, and the windows and doors left wide open. The chimney in a bedroom should always be open, as this ensures constant ventilation. Beds should be left

a long time before making (at least two hours, if possible) to allow time for the bedding to get quite cold, and for the fresh air to dry the moisture always given out by the body, and generally to freshen up the bed. Insufficient airing leads to unrestful sleep, and is bad in every way; making the bed almost immediately after rising cannot be considered in any way desirable or hygienic. The longer it can be left open the better. If exposed to sunshine, this is all to the good. *After breakfast* the bed may be made. There is a certain skill about doing this properly; a well-made bed is much more comfortable and restful to sleep in than one thrown together anyhow and is characterized by the following points—

Sheets and blankets straight and smooth, the under one without wrinkles, one at any rate being well tucked in at sides.

Clothes tucked in at foot to prevent being easily pulled off, but not so much as to deprive the shoulders of their due share of covering.

Bolster and pillows well beaten and comfortably placed.

The following method of making a bed may be adopted, though preference of course differs considerably in details—

The mattress requires turning daily from top to bottom, and every few days from side to side, in order to get as even wear as possible, and to prevent flattening. (See also page 197.)

Spread on under-blanket and sheet separately, tucking well in and pulling to avoid any creases.

Put on bolster and pillow, well-beaten with the hand, nicely smoothed, with the fastenings away from door. If no bolster cover is used, the under-sheet must be rolled round it. A comfortable method of doing this is to place the bolster *on* the bottom sheet, and bring this over the bolster from the *back*, tuck it in well in front, straighten folds at side and tuck them in firmly. It is necessary to see that only enough sheet is turned in at the foot to hold properly, so that there is enough to roll round the bolster at the top.

Put on top sheet, leaving enough to fold over blankets. Sheets are generally arranged with the wide hem at the top, and right sides facing so that the top sheet when turned down shows the hem on the right side. Put on blankets one by one, evenly and without creases; turn down sheet over them and tuck in all round. The edges when tucked in should be flat, and the corners mitred to prevent ungainly bumps. When tucked in the whole bed should look straight and smooth.

Finish by putting on counterpane, which is not tucked in and covers all the bedclothes, hanging down about a foot at the bottom of bed. An eiderdown, when used, may be put either under or over the counterpane.

Fold night attire neatly, put in a case and place on the bedcover, just below the pillow.

Big beds are made by two people much more easily than by one alone, and though two are a help for small ones they can be managed perfectly by one person. (See also footnote on page 197.)

Evening Attention to the bedroom consists in pulling the blinds and curtains and opening the bed, standing a covered can of hot water in the basin, if used, and generally making the room ready for the night. The counterpane is removed from the bed and folded carefully; the bedclothes are turned down again off the pillow and one side loosened and the corner turned back; and the night clothes are laid out invitingly.

WEEKLY CLEANING. The many duties of the house do not allow of cleaning everything thoroughly every day, though this should be attempted as far as possible. In order to prevent undue accumulations, therefore, time is devoted at regular intervals to giving a more complete "turn-out" to all parts of the house, commonly known as a "weekly clean." It rather depends, however, upon how much a room is used, and if the house is situated in town or country, whether this turning-out actually takes place weekly or less often. The guiding principles and methods, however, are the same, i.e. the removal of the maximum amount of dust and dirt is aimed at compatible with the time at the housewife's disposal. The actual principle of cleaning methods is the same as for daily cleaning or polishing, but as this removal is more thorough, greater precautions are taken for the prevention of dust settling, and greater facilities given for removing it. An order of work for those who do not possess a vacuum cleaner may be suggested as follows, and may be divided into Preparation, Cleaning, and Finishing—

Preparation. Ventilate the room, collect and remove any articles requiring special cleaning, such as metal ornaments, etc., to another place; take out rugs, cushions, and table-covers for beating and shaking; collect all cleaning equipment likely to be required in the room.

Dust the furniture, group it together where possible, and cover with dust-sheets; or it may be taken out of the room into the passage. But though this gives more space, in small houses and flats it is difficult and not to be advised, as it causes much irritation and annoyance to other members of the family and makes cleaning anything but popular. Small curtains should be taken down and large ones shaken carefully as they hang, and pinned up out of the way.

The Cleaning proper can now begin with the removal of dust. If there has been a fire, this must be cleared, the grate cleaned and the fire re-laid. If there is no fire, the polishing of the grate and attention to surround may be carried out after all dust has been removed from the room.

Dust is then removed by means of a cornice brush, or a duster

over a soft broom, from high places not touched daily, such as ceiling corners, cornices, door and cupboard tops, etc., including high pictures, and blinds, which are let down, dusted, and rolled up. In this way any dust falling will be removed with the sweeping of the floor; the dust from the latter will not be raised so much as to make these high places dusty again. The walls are not generally swept at every weekly clean, as pictures are not removed, but the wall behind pictures and the latter themselves should be dusted. Walls brushed down occasionally, however, remain clean longer, and papers require less frequent renewal than if left untouched for any considerable period.

Removal of dust from floor is the next step, according to the kind of material, as described for carpets, linoleum, or wood. While dust is settling, rugs, cushions, etc., previously removed, may be attended to out-of-doors.

Thorough dusting everywhere follows; steps may be required for curtain poles and high cupboards.

Any articles requiring special cleaning, such as paint-work or metal work, and windows, now receive it, together with any necessary polishing of furniture and, lastly, any finishing, such as washing or polishing the floor.

The Finishing consists of unpinning curtains, putting down rugs, and putting the room in order generally.

N.B.—When the floor requires washing or polishing it is a good plan to replace as much as possible in the way of ornaments before doing this, both to avoid moving furniture laden with them and also to avoid stepping on the cleaned floor.

Weekly Work in a Bedroom is done in the same way, with a few points of difference. These apply to the washstand and the bed. The *washstand* will require extra attention, and the ware may be washed either in the room in a large bowl or bath, when the floor will require protection; or it may be carried elsewhere and cleaned. If washed in the room it can be packed upon the washstand and covered with a dust-sheet, arranging properly and filling the jug and bottle after the cleaning is done.

The Bed will require some attention. After airing, the mattress should be well brushed, especially round the tabs, and removed, so that every part of the bedstead may be freed from dust by means of a brush and a duster. The underlay should be removed and well shaken. The blankets, especially the under-blanket, should also receive a good shaking, out-of-doors if possible, as they get very dusty. The bed is then made, except for covering with the counterpane; and after spreading with paper or a dust-sheet, the worker will pack up small light articles on it and cover them. Proceed as usual with the cleaning.

It may be noted in passing that the more thorough the weekly clean, especially when all out-of-the-way places receive occasional

attention, the less arduous will be the annual turn-out of the whole house. There is no advantage in merely keeping the surface tidy, and reserving real cleaning till then, any more than there is in relaxing the daily care and cleaning only once a week or so. For those who possess a vacuum cleaner, especially one worked by electricity, weekly cleaning is far less troublesome, and if it is used regularly spring-cleaning will not entail half the labour. The advantage of this method is that the dust is collected in a bag, which can then be emptied, and the contents burnt in a hygienic and cleanly manner. As there is no scattering of dust, there is no need to remove or cover up furniture. By means of attachments the cleaner will remove dust from walls, curtains and upholstered furniture, as well as from carpets, and from any articles over which it passes. The more powerful the suction the better the cleaning, and it is without doubt the most efficient way of dealing with dust. The order of work is different with a vacuum from that adopted in the absence of such aid.

Using a Vacuum Cleaner. A suggested order of work with a vacuum cleaner is given below.

Remove articles requiring special attention, do grate if necessary.

Dust the whole room thoroughly.

Go over every upholstered article, curtains, cushions, rugs and carpet, with the cleaner, being careful to clean under and behind furniture. A cleaner that has a bend in the handle to allow this to be done easily is recommended. Some machines have useful attachments for cleaning walls, mouldings, and carved work, and at least one has a special one for linoleum and polished wood floors.

If any threads have escaped the cleaner, these can be gathered up by going over the carpet carefully with a carpet sweeper. Afterwards, polish the surround with a polishing mop, if desired.

SPRING CLEANING. As the gloom and darkness of the winter months begin to give way to the lighter and brighter days, there is a natural desire to make our habitations fresh and attractive to match the young greenness of the Spring. The brighter sunlight peering into corners shows up any shabbiness, and suggests renovations and alterations. This desire embodies itself in the outburst of activity known as Spring cleaning, popularly supposed to be enjoyed by housewives, but more often regarded by them as a necessary evil. As in all other things, there is a wrong way and a better way of carrying out this ; it can be done with absence of all unnecessary fuss and worry, and with as little fatigue as possible ; it is all a matter of forethought and planning. Much can be done in the way of preparation at odd times some time before the actual cleaning begins, so preventing hindrances and speeding-up the work.

The actual date depends on circumstances, but if it is left too late

the warmer weather will make the work difficult; on the other hand if it is done too early, fires are not finished with sufficiently, and furniture cannot be taken out of doors. It is a good plan to finish first all places infrequently used, and to leave till last the actual living-rooms where there are fires. If the household is large, a time when some or most of the occupants are away is satisfactory. Below are suggestions for preparations which could suitably be made before the turning out of the rooms takes place.

Preparation. Any decorations required should be decided on early, and the workmen engaged for the appointed date.

The same applies to the sweep and any other workmen, and to any extra help required, to ensure service.

The turning out and sorting of the contents of drawers, cupboards, etc. The woodwork should be scrubbed, dried, and re-lined with fresh paper before the articles are put back. Any useless articles should be thrown out; those which can be cut up for cleaning rags or other things, put aside for attention and used later on, and all stored summer things for house or personal use unpacked and made ready.

Faded covers and curtains can often be renovated successfully by home dyeing. There are several good makes of dye on the market; for those articles which are subjected to much sunlight boiling-water dyes are preferable, and the directions given should be carefully followed. Where covers and hangings are required to match or tone with the rest of the room, a mixing of colours will often give the desired result. Before use, a small portion of each dye should be mixed and tested before the whole is dissolved. It must be remembered that rinsing should continue until no more colour comes from the material, and it is inadvisable to squeeze much, owing to the risk of streakiness. Articles should drip dry and should be spread out as much as possible; silk and very thin materials can be rolled in a cloth and ironed almost at once.

Any bottles, jars, and tins containing household stores will require overhauling and re-labelling.

Any home-made scouring pastes and polishes likely to be required may be made, and all cleaning agents necessary bought.

Pictures will require examination for necessary attention, such as re-cording or re-backing; books should be removed from shelves and dusted separately. A feather brush is useful for this, and loose dust from the insides may be got rid of by opening the book and shutting sharply several times. It may be remarked that only someone who understands the handling of books should undertake this work, as much damage can be done by careless or inexperienced persons.

Any washing or cleaning of winter garments, blankets, etc., may be done, and the articles packed away with moth preventative. Mattress covers, underlays, and blinds may be washed also.

Any mending of china or wooden articles which can be done at home may be accomplished, and any small household repairs dealt with. The overhauling of burners, if gas is used, can be done at any time, but new mantles are perhaps better put on when spring cleaning is nearly over, owing to risk of breakage.

Meals during the actual spring cleaning are important, and should not be neglected. Workers require good food in plenty when working hard, and arrangements can be made whereby there is some part of the house comfortable, where meals and rest can be taken, and which those not actually engaged in the work can occupy. It is not good planning to have the whole house upset at once.

In the case of workmen coming in, all necessary preparations should be made beforehand, as many of them start early in the morning. The sweep's visit should take place before the cleaning of a particular room is begun ; if several chimneys can be done at the same visit this saves much delay. Any painting and decorating is next done, either by experts or by home-workers. All ornaments, pictures, carpets and small pieces of furniture are moved before beginning, the larger pieces being grouped in the centre of the room and well covered. If upstairs, the stair-carpet should be removed to save wear and tear. Any staining of surrounds or floors, however, takes place when the cleaning of the room is completed. When beginning the cleaning, it is a good plan to start with the top of the house and work downwards, and to get one room finished before going on to another. This also avoids unnecessary discomfort to occupants. When the rooms are finished, the landings, stairs, and hall follow, finally the kitchen, scullery, and outhouses.

Method of Working. This is the same as for weekly cleaning, but is much more thorough—

Removal of all ornaments, pictures, blinds, curtains, rugs and carpets, etc., for subsequent cleaning.

Removal of dust from furniture, which should be moved away from walls and protected with dust sheets.

Clearing of fire, and sweeping of ceiling. This, if of plaster, should be lightly done to avoid injury ; a wall brush may be used.

Sweeping down walls with a duster-covered broom ; sweeping of floor and thorough dusting.

The washing of paint work and cleaning of every part of the room and its contents should follow ; finally, if necessary, washing the floor.

When everything is cleaned, the blinds and curtains may be put up, the carpet laid, and everything arranged.

The use of an electric cleaner is much the most satisfactory method of spring cleaning. The order of work is similar to that for weekly cleaning but it is even more thorough, the ceiling being

included. Washing of paint and other cleaning will then proceed as previously described.

Walls. Papered walls are sometimes partly cleaned by sweeping, and may be further freshened by rubbing with stale bread, or with a non-sticky dough of flour and water. Either should be gently rubbed on the soiled parts till they seem clean, a new surface of the dough or bread being exposed as it becomes dirty. Care must be taken not to roughen the paper, and that no trace of dough remains on the walls, or it will ferment and form a breeding place for germs.

Varnished Paper is treated like varnished wood, with a little dissolved borax and nearly cold water. This also may be used for washable *distempered* walls; water can only be employed sparingly on the latter, and much friction should be avoided; a soft sponge is very suitable to use for washing.

Torn Wallpaper, or a bad patch, may be satisfactorily repaired in the following way. A piece of wallpaper should be matched for pattern, and then torn to the required size with the fingers. This leaves an irregular and fine edge, which when stuck on the wall will be hardly noticeable. Home-made paste of cooked flour and water may be used as an adhesive, with a little powdered alum (½ teaspoon to 1 oz. flour) or a few drops of "Sanitas" to prevent decomposition. Apply with a brush or pad to patch, the worn part having been wiped with a damp cloth, place it carefully in position, and press gently but firmly with a cloth from centre outwards.

The Overhauling of Pictures. Spring-cleaning time is a suitable time to examine the cords and backs of pictures. Any frayed or worn cords should be renewed and the glass and frame cleaned. The glass may be polished with a few drops of methylated spirit; water should not be used owing to the risk of damping the picture. If the paper-backing is loose, this may be replaced and the opportunity taken of removing the picture entirely, and washing the glass on both sides. The brads must be carefully removed with pincers. Dust the picture, and clean the mount, if necessary, with indiarubber or dough; the frame also is easily cleaned. If of gilt, this may be washed with water in which one medium-sized onion has been boiled (one onion to about 1 pt. water) till tender, strained and cooled. If the frame is very dirty, divide the solution, rinse with clean onion water, and dry thoroughly. When all is quite dry, the glass and picture are replaced and the wooden backing (also cleaned) put back with the brads, which may be put into the same holes. The hammering must be done carefully to prevent injury to the glass; a cloth under the picture helps to minimize the jarring. To prevent the entry of dust, cut a piece of paper large enough to cover the frame. Damp one side of it, paste round the edges, and place in position, pressing from the

inner edge of frame outwards, the rings having been previously removed. As the wooden backing is generally lower than the frame, care should be taken not to press in the centre, or to break the paper. When dry, replace rings and re-hang.

Spring Cleaning Blinds. Venetian blinds require unstringing and cleaning. The cord and tapes may be washed, and any worn parts renewed.

Holland blinds, glazed or unglazed, should be taken down and washed. These will be attached to a roller, and are more easily managed if removed from it. To retain the holland colour, washing is done in bran water instead of in soap and plain water. Unglazed blinds are usually sufficiently stiffened if dipped in full strength bran water; glazed ones, however, will require stiff boiling-water starch, and after ironing should be polished on a hard surface. In drying and ironing blinds, great care is necessary to keep them in the proper shape, or they will not roll correctly.

To Make Bran Water. Tie half-a-pint of bran loosely in muslin and stew gently in 1 qt. of water for 20 minutes. Strain, and add to an equal quantity of water. Add enough dissolved soap to form a lather. The bran can be boiled up twice more; but for stiffening the first boiling should be used.

Coloured Linen Blinds. These may be wiped over to brighten the colour after dusting, with a cloth wrung out of methylated spirit and vinegar, but they should not actually be made wet.

PACKING UP A HOUSE TO BE LEFT EMPTY. Unless a house is left empty for a very long time, there is no reason why it should be found dirty on the occupants' return. It will be dusty to some extent, the amount of dust depending on the state of the masonry and woodwork. Well-fitting doors and windows let in much less dust than badly-fitting ones. However closely windows are shut, the difference of temperature inside and outside the house sets up air currents through crevices which carry dust with them. If a house is habitually kept clean, and left clean before shutting up, it should be found clean on return. The chief danger is damp, which may attack articles in the house; this is more difficult to guard against than dirt, as so much depends on the house itself, the locality, and the weather. The amount of packing up required depends on the length of time the house is to be left: more care is naturally required if left longer than a few weeks.

All cupboards and drawers containing clothes should be tidied, and camphor or other moth preventive well scattered about. Woollen articles, such as rugs or blankets, are best kept in a box, or well wrapped in newspaper, with camphor. Any rubbish should be got rid of.

Carpets and rugs may be rolled up, or covered with paper or dust-sheets, and the furniture gathered into centre of room, and covered. Any loose covers, counterpanes, toilet covers, etc.,

should be washed and put away clean, and ornaments may also be put away.

All valuable silver or other possessions small enough to move are safer if taken to the bank, or to some other reliable repository.

No water should be left in jugs, bottles, vases, etc., all of which should be dry. All food, except tinned and dried goods and preserves, should be used up, or it will decompose; larder shelves may be scrubbed.

It is not desirable to leave soiled linen of any description, and some arrangement should be made for dealing with it. Beds are left unmade, as they will require thorough airing before being used again.

Windows should be shut and locked, and blinds pulled down; the chimneys, however, are best left open if they have registers, as this will allow of ventilation and guard to some extent against damp.

All parts of the house, if thoroughly cleaned, will be nothing more than dusty on return. Traps and water closets should be clean and full of clean water.

Gas, electricity, and water should be turned off at the main, and the water in the pipes emptied by turning on the taps; if a note is taken of the meter-readings before leaving and on returning, any leakages will be detected.

All goods put away, especially metal, should be protected from damp; metal may be rubbed well with oil, vaseline, or mutton fat.

Before leaving, arrangements for the care of any domestic pets, and for the sending-on of letters should be made.

Plants that will stand it may be put out-of-doors; others may be put in charge of some responsible person, who may also give attention to the garden, if there is one.

The house-key may be left in charge of a friend or with some other trustworthy person.

The calls of tradesmen should be stopped; they should be notified before return in order to ensure a supply of milk, bread, etc., on return, and all bills should be paid up to date.

All drawers and cupboards should be locked, and greater safety is ensured if every room door is also locked.

Unless a house is left untenanted for many weeks or months, an occasional airing is unnecessary, as this lets in much dirt and dust, making cleaning much more arduous on return. It must, however, be thoroughly aired before the family sleep in it again.

Interior Sprung Beds. These are damaged if moved much, but they may occasionally be turned from side to side, or from end to end, handling by the fixed loops, to bring different springs into use; but care *must* be taken during this operation not to bend them. Air daily, and from time to time brush the base and tabs, and polish the headboards, if necessary. (See page 190.)

CHAPTER XVIII

COSTING; TIME AND MOTION STUDY

COSTING is a section of book-keeping in which the expenses of production are carefully recorded. The difference between ordinary accounts and costing lies in the fact that not only are expenses and profits shown, but also the time-value of operations. The actual cost in money for producing an article may be augmented by the cost of time spent in making it. If much time has been wasted during its manufacture, it will have cost as much more as the wasted time is worth. The unproductive time has to be paid for in wages to the workman; but if he does not turn out, for any reason, as many articles as could be made in the time, there is an expensive leakage of money. Costing aims at keeping such accounts as will show when such a leakage occurs, so that a remedy may be applied.

TIME STUDY is concerned with the analysis of the time used in carrying out the details of a piece of work, and is closely connected with motion study.

MOTION STUDY examines the motions made in handling work. By accurately measuring the time taken over separate operations, and analysing the movements made, it is possible to detect where waste of time and labour occurs, whether caused by mislaid or inefficient tools, want of preparation of materials, or awkward placing of them; or any other cause. The analysis shows where unnecessary movements are made, and time lost (i.e. wasted) thereby, and makes it possible to arrange work so that only the fewest possible motions are made. This naturally results in a great speeding up, with consequently greater output in the same time, and therefore increased profits.

The experiments carried out on time and motion study have revealed the fact that by arranging every piece of work in a scientific way, and finding the requisite number of effective motions required to perform it, the worker can, after a time, accomplish without fatigue a very much greater amount than could have been thought possible under the ordinary haphazard system, in which he worked out by experience what he considered the quickest method of doing things. The investigators also found that more work can be accomplished if carried on in short periods of great activity followed by a rest, than by working for a long time and resting for a correspondingly long period. Some concrete examples of their results are of interest. It was found that certain workmen, after training on the lines laid down by the time-study men, could increase the amount of pig iron carried daily by each man from about 12 tons to 45 tons, without being any more fatigued than when carrying

12 tons under the old system; also, they could each continue to move 45 tons daily for an indefinite period. The second point mentioned was exemplified in the case of two squads of men engaged in trenching—one set rested and worked at short intervals, while the other worked for a long stretch without resting. The former set, in the end, did more and better work, with less fatigue, in less working time.[1]

A system of management was introduced in America a few years ago, in which workshops were organized on methods based on a careful study of costing, time, and labour. This system received the name of "Scientific Management," since everything to be done was planned on lines that would increase production by eliminating waste of all kinds, whether of time, labour, or money. The methods used were based on common sense, experience, and investigation, and not left to chance. In works where it was adopted, every detail of work was timed and examined, and improvements made by which processes were speeded up considerably. The time in which every part of a piece of work should be performed was worked out, and detailed instructions were issued to the workmen, who had to follow them exactly. The rate set was one that could be followed day after day for an indefinite time. This system of management required much clerical work and planning, and an exact knowledge on the part of the managers of what had to be done.

Now, in examining the methods of scientific management, certain underlying principles may be observed, upon which the successful management of any undertaking may be built. Although some of them are not applicable to any but large businesses and factories, yet some of the most general may be adopted by the housewife and applied to her own little "business" of the home.

Scientific management pre-supposes a definite knowledge of what has to be accomplished; written down, or clearly apprehended, by the worker and by those who direct the work.

Before any work is planned, a careful investigation of the processes with regard to time- and labour-saving should be made, and sources of waste noted.

The planning of work should then be done in such a way as to embody the results discovered by previous investigation; and changes of methods, which will eliminate unnecessary movement and waste of time, made wherever necessary.

To do the best work in the shortest reasonable time, good tools in good condition, and adapted to the work they are to do, are necessary.

The shortest walking circuit consistent with efficient work should be discovered, and tools and materials arranged in accordance with this.

[1] *Scientific Management*, F. W. Taylor.

Care must be exercised in the keeping of accounts, to show any sources of waste in materials, etc., or extravagance in any way; and to show exactly the cost of each article.

In the business world the aim is to get increased production and to reduce the costs by obtaining a greater output in a shorter time. In the household, the great object is to perform the necessary work with the least expenditure of effort and time, so that it may not become an intolerable burden; the money side may not be very much affected, but this is counterbalanced by the increased leisure for other pursuits, and by the reduction of fatigue. The foregoing principles may be applied by the wise housewife in her own home, in order to secure a better order of work.

A definite idea of the work to be done. Before starting to plan her work, the housewife will have clearly in her mind exactly what aims she wishes to accomplish.

Investigation of Methods Employed. She should scrutinize carefully every process of work, in order to find out where waste of time and labour is occurring. Very few people know exactly how long it takes to perform the various acts in the daily routine—for example, making beds, or washing-up—things which are done regularly day after day with little variation. It would be well for the housewife to go through all her usual work for a day or so, timing everything by the clock, and keeping a note of it. If she can time someone else, or get someone to keep the time for her, it would be a more reliable test. This might be done for several days, careful observations and notes being taken on the movements made and the distances traversed in performing each set of actions, including the time wasted in moving along passages and up stairs, during which no useful work is done. This would no doubt be rather laborious and somewhat difficult, but well worth doing, as from an analysis of the results losses of time and unnecessary movement can be detected; and also the causes, whether faulty arrangement, bad tools, or thoughtless planning.

Remedies may suggest themselves merely from the results of such investigation, and frequently small faulty details not previously noticed, which have caused much loss of time and energy, can be rectified—such small things as a shelf that is too high, necessitating steps or a big stretch; or one too low, causing much stooping; things needing frequent removal, which are too heavy for ease in handling; detours rendered necessary by a bad arrangement of furniture: all such are perhaps trifles, but they are quite unnecessary, and very easily altered, with consequent saving of time, temper, and labour. Anyone taking the trouble to examine critically the working of the daily round will discover many such unnecessary hindrances, both inside and outside the house, where a little thought would make a vast difference to the ease of carrying out the work.

Changes of Methods and Planning of Work. The housewife should endeavour to think out improved methods, where necessary, involving fewer movements, and saving time. She should know exactly how long it takes, working steadily, but without undue haste, to get through any one task, and the best method of carrying it out. For example, a daily duty in which much time can be wasted is the washing-up. This must be done at least three times a day, sometimes four, and there is probably no work more distasteful or more time-consuming. Waste of time often occurs through several journeys between dining-room and kitchen or scullery with trayloads of crockery; emptying these before fetching another; sorting into piles; placing the dirty things so far from the sink that the worker must move a short distance to fetch fresh supplies; absence of plate-rack, necessitating a rather longer time spent on putting plates carefully in a pile; wiping-up, the positions of the draining board and table requiring a half-turn, or a walk of a few steps, to put the dried articles down; putting away of different things in various places requiring several journeys to and fro.

In almost every house some, or all, of these delays occur and could be obviated. One method is to use a dinner wagon by which the time and labour of washing-up can be considerably reduced. By this means all the crockery, etc., can be removed at once, requiring one, or at most, two journeys, and the necessity of unloading trays is avoided.

The dirty things can be sorted automatically when put on the wagon.

The wagon may be brought close to the sink where the worker can lift them straight to the water as desired, without having to walk anywhere to fetch them.

A plate-rack saves much time in wiping plates; spaces for dishes and saucers are also convenient.

The dried things can be put either on to the wagon, and wheeled round to the various cupboards for distribution, or into cupboards fixed near the place where they are washed-up. The time and labour saved in this way would be found to be considerable, and there is no lifting of trays to be done. Where the dining-room adjoins the kitchen the obvious remedy is the hatch; if a basement kitchen, the service lift. In every house, there will generally be found some point where improvement may be made with a corresponding gain in time, and a shortening of labour.

Cases similar to the above, which has been considered in some detail for the sake of clearness, can be multiplied indefinitely, and it is the duty of the housewife to subject all her work to such scrutiny and make her plans accordingly. The work should be organized in such a way that all unnecessary labour is avoided; for example, all work requiring similar materials and tools might

be done at once, as, for instance, if two rooms have to be turned out, the doing of two near together saves time in walking from one to the other, and energy in carrying things to and fro. All work should be done by timetables, drawn up in accordance with actual practice, and the worker or workers should be expected to perform the different tasks in the time allotted to each. Short intervals of rest, or of lighter work, should be allowed for; and, whenever possible, work, especially in the kitchen, should be done sitting down.

Provision of Tools. Although it is true that a bad workman will not produce good results, however good his tools, nevertheless the best work cannot be obtained by any worker if the implements used are faulty. This holds good in housewifery as in any other work, and the housewife should endeavour, as far as she can, to provide the best possible equipment for performing the work. She should also see that it is adapted to the work required of it, and that it is kept for that work; one does not expect a chisel to make an efficient screwdriver; nor should an implement intended for one purpose be used for something quite different, and be expected to produce as good results as one intended for the work. Also, appliances, to produce the best results, should be kept in good condition, or they will fail in efficiency. The worker using the articles must be impressed with this necessity, and maintain them in an efficient working condition. Ill-adapted and badly-kept equipment of indifferent quality will spoil the best work, besides causing delay and annoyance. It is important, moreover, to select those kinds which will save and lighten labour wherever possible, without themselves causing extra work.

Short Walking Circuit. All arrangement of furniture, cupboards, etc., should aim at providing a short walking distance from one piece to another. This is specially important in the kitchen premises, where much time can be saved and much walking avoided by having the various tables, cupboards, etc., arranged so that any work done proceeds in a logical sequence from one to the other. The best method of obtaining this short circuit depends on the house itself and the work to be done; but it is a point that needs a good deal of thinking out, and well repays the trouble of doing so. Some difficulties, such as long passages, cannot be altered, so that the housewife needs to concentrate all the more on saving steps in those over which she has complete control.

Accounts. In scientific management, very careful and detailed accounts must be kept, but in the household this is impracticable and unnecessary. Simple accounts, however, should be kept, to show the expenditure of money, and to indicate where extravagance is occurring.

As already remarked, the gain in monetary value due to thoughtful management may not be at all marked, but it is realized in

other ways, negatively in less fatigue and less worry ; and positively in more time for other things. The house will be kept in better condition more easily than before, and nervous and physical energy will be expended on useful work, while that which would otherwise be dissipated in unimportant and non-productive work is kept for social and intellectual pursuits. Perhaps it would be well to emphasize that most of the thinking and planning should be done in advance so that the work goes on from day to day without the ceaseless worry of " What is to be done to-day ? " Thus a system of management based on the lines suggested should make life easier, not, as might appear at first sight, more difficult, for the mistress of the house. An intelligent appreciation and grasp of essentials and " worthwhileness " is possibly the most important requirement in the successful organization of the home ; together with patience, an open mind, and a willingness to adopt new ideas. The failure of many housewives is due not to lack of energy, ability or will, but to lack of adequate knowledge of how these can be employed to the best advantage. As in every other department, the best results are obtained after practice ; once the new time- and labour-saving habits of work have been acquired, the gain is apparent, but often the breaking away from what is " customary " and " always done " takes time and patience.

CHAPTER XIX

MANAGEMENT OF HOME

IT is the aim of every housewife to provide for the comfort and well-being of those for whom she is responsible. To do this requires considerable knowledge of all details appertaining to house management. She must see that the house is warm and comfortable, clean, and suitably arranged; and that the meals are nourishing and appetizing, and served punctually and daintily.

In order to carry out this twofold aim it is essential that the housewife should have a knowledge of money matters sufficient to guide her in apportioning the income, and to enable her to keep simple accounts; to know how best to expend the money available for housekeeping, so that value may be obtained for it; this implies knowledge of marketing and values. She must also have knowledge of the work to be done in the house in order to keep it clean and comfortable, and of the most efficient way of dealing with it so that it is easy to run, and that the worker or workers are not overfatigued, and are able to enjoy proper periods of rest.

APPORTIONMENT OF INCOME. The standard of living adopted by a household should depend on its income; it is a wise man (or woman) who will "from a little, take a little, and a little leave," and it sometimes requires considerable strength of mind to do so. A survey of the money coming in yearly, however, and a careful allotment of portions for essential purposes, greatly helps to regulate the spending and provides against lean times following extravagance. As the spending of an income is largely the woman's concern, and upon her use of it depends the welfare and to some extent the happiness of her family, some thought and care devoted to mastering household accounts and expenditure is well spent.

Incomes may range from day wage or weekly wage, to yearly payments, and may be fixed or fluctuating. The day labourer earns a varying amount a week, so do some piece-workers, while those in regular employment can count on a definite sum of money at regular intervals. Again, some incomes are paid yearly, and though definite, are independent of the work done; while others, as in business circles, may be large one year and small the next, the amount being governed by business ability, trade conditions, and other factors. Still again, the income may depend entirely on the personal exertions of the earner, as in the medical and artistic

world. Under such varying conditions any attempt to dogmatize on the management of income would be presumptuous and foolish, and it is impossible to do more than indicate the lines upon which the planning may be done.

The Essentials of Life for all classes are shelter, food, clothing, and fuel; and these are the first to receive consideration. The smaller the income the larger the proportion spent on providing them. As the income grows, there is a corresponding inclusion of accessories for increased mental and physical well-being and comfort.

"*A little left*" after essentials have been met, in other words, saving, is desirable as providing a reserve upon which to draw in times of hardship or unusual expense. To live up to the margin of an income, however small, is not only uneconomical but unintelligent, as it demonstrates a lack of that foresight with which man alone is supposed to be endowed. Every effort, therefore, is praiseworthy that attempts to "put by for a rainy day" by avoiding unnecessary expense and luxuries that could be dispensed with; but saving is not admirable that is made at the expense of necessities. What exactly constitutes necessities is perhaps a moot point, and one that can be decided only by every individual, since what is a necessity to the highly-educated classes is beyond the comprehension of, say, a dockside labourer; but parsimony in food when less essential things, such as undue amusement, might be cut down, is an example of imprudent "saving." Where the income is very small, saving is effected by, for example, making the most of old clothes before buying new ones, and making things at home instead of buying ready-made ones. In more easy circumstances, curtailment of expensive amusements and refraining from very rare and choice foods, such as those out of season, are a source of saving. In whatever circumstances a couple may find themselves, the settlement of what they think a reasonable sum for saving should be given their first consideration. It is the duty of all heads of households to make each member of them useful and intelligent members of society also. Lack of appreciation and foresight in, for instance, cutting down expenses by under-educating these future citizens is neither saving nor economy, since they may cause greater and more prolonged expense later on as a result, whereby the community is all the poorer. These two, *necessities*, i.e. food, clothing, shelter, and fuel, and *saving*, are, in general, the two great divisions into which all incomes should be divided.

The apportionment is governed by the following considerations—*The standard of living*, i.e. what is considered the least degree of comfort compatible with station. The standard of living in this country has increased greatly in the last thirty years, with the result that wages and prices are higher, and the bulk of the people are

no longer content merely to exist, but demand the right to enjoy life as far as they can.

The Locality and, therefore, the amount payable for rent, will affect the budget. Rent is usually less in the country than in the town, and less in the provinces than in London and other large cities. It varies also in towns with various neighbourhoods, the most fashionable being the most expensive. This influences not only rent, but the prices of food, light, clothing, and other important details. The distance from business or work influences the necessary travelling expenses.

The Size of the Family and Household influence greatly the apportionment for service or help of any kind, as well as the actual amount set aside for food and clothing. The ages of children cause variations from year to year, as expenditure for education and upkeep becomes greater.

Relaxation. The budget should, if possible, show a portion which can legitimately be spent on amusement or other relaxations. Life does not consist only of necessities, and the amenities of social intercourse, and all stimuli to increased knowledge and breadth of outlook, are equally important. The danger lies in over-indulgence to the exclusion of essentials, but if a reasonable sum is kept entirely for the purpose and adhered to essentials will not suffer.

Examples of Budgets. The following two budgets are given as a basis for discussion only, to show the method of apportionment with different incomes. It is assumed that Income Tax has already been deducted, and the incomes are £500 a year net, and £4 10s. per week net.

(*A*) £500 a year. *Family consisting of Parents and two Children.*

Rent (including Rates)	£80 a year	16 per cent
Food	£130 ,,	26 ,,
Fuel and Light	£20 ,,	4 ,,
Domestic help	£26 ,,	5 ,,
Repairs and Laundry	£20 ,,	4 ,,
Clothing	£55 ,,	11 ,,
Insurance	£20 ,,	4 ,,
Holidays, etc.	£25 ,,	5 ,,
Medical, Dental, etc., Care	£14 ,,	3 ,,
Educational Expenses	£30 ,,	6 ,,
Reserve	£10 ,,	2 ,,
Wife's Personal Allowance	£10 ,,	2 ,,
Husband's Personal Allowance (including daily expenses)	£60 ,,	12 ,,
	£500	100 ,,

(*B*) *Weekly Wage Earner. Income £4 10s. per week.*
Family: Parents and three (or four) children.

	£ s. d.	per cent
Rent	15 –	17
Food	1 15 –	38
Fuel and Light	6 –	7
Clothing	10 –	11
Insurance	5 –	5
Cleaning Materials and Repairs	2 –	3
Holidays and Amusements	5 –	5
Father's Allowance	10 –	11
Mother's Pocket Money	2 –	3
	£4 10 –	100

Note. Children and husband have school dinners and canteen meals.

The following figures are given as a comparison with the theoretical division suggested. They are the actual amounts expended by an elderly married couple, without children, living in the country some years ago. The husband was a gardener, with a weekly wage of £2. The wife, who was not over strong, took in a little washing, which enabled her to pay for her own clothes, and to replenish household linen when necessary. The house had six rooms with cold water laid on in the scullery, and outside sanitation.

Rent		6 –	$\frac{3}{20}$
Food—			
Grocer	6 10		
Bread and Flour	2 –		
Meat and Fish	6 –		
Milk	1 2		
		16 –	$\frac{8}{20}$
Fire and Lighting		5 –	$\frac{2\frac{1}{2}}{20}$
Insurance		1 1	$\frac{1}{20}$
Cleaning Materials and Sundries		1 3	$\frac{1}{20}$
Newspapers and Subscriptions		– 8	$\frac{1}{20}$
Husband's Pocket Money		10 –	$\frac{5}{20}$
		£2 – –	

The husband paid for his clothes, and into a benefit club, bought seeds, etc., from which he supplied all vegetables used, and reserved a certain portion to meet emergencies.

DAILY ACCOUNTS

Week beginning		£	s.	d.	*Week beginning*		£	s.	d.
Feb. 14	To Balance .	1	5	–	Feb. 14	By Laundry .		4	9
,, ,,	,, Receipts .	5	–	–	15	,, 2 lbs. cod .		1	6
						,, 6 lbs. potatoes 9d., sprouts, 4d. . .		1	1
						,, Gas meter .		1	–
					16	,, ½ doz. eggs .		1	3
						,, Gas meter .		1	–
					17	,, Bus fares .			10
						,, Dried haddock		1	4
						,, Cabbages, 4d., carrots, 4d., tomatoes, 6d.		1	2
						,, 2 lbs. Apples .			8
					18	,, Groceries (*see* book) . .		14	5
					19	,, Butcher .		12	6
						,, Balance .	4	3	6
		6	5	–			6	5	–
		£	s.	d.			£	s.	d.
Feb. 21	To Balance .	4	3	6	Feb. 21	By Laundry .		5	6½
						,, Eggs, 1 doz. .		2	–
						,, Meter . .		1	–
					22	,, Fares . .		1	6
						,, Fruit . .			10
						,, Vegetables .		1	–
					23	,, Flowers .		1	–
						,, 1½ lb. hake .		1	6
					24	,, Gas . .		2	–
					25	,, Groceries (*see* book) . .		12	2
					26	,, Butcher (*see* book) .		10	–
						,, Milk (*see* book)		4	–
						,, Bread ,,		5	3
						,, balance. .	1	15	8½
		4	3	6			4	3	6
		£	s.	d.					
Mar. 1	To Balance .	1	15	8½	Mar. 1				
	,, Receipts .	5	–	–					

MONTHLY ACCOUNTS

Month . March, 19..
Balance in hand £1 6s.
Receipts . £25 –
Total in hand £26 6s.

to pay for Household Expenses.
excluding:
Rents, Rates and Taxes, and Quarterly Bills.

Items.	1st week.	2nd week.	3rd week.	4th week.	Totals.	Monthly Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Food—						
Grocer . .	13 –	14 5	15 –	13 9	2 16 2	
Butcher. .	12 6	13 –	12 3	12 10	2 10 7	
Fishmonger .	3 2	2 6	1 11	3 6	11 1	
Milkman .	4 8	5 –	5 –	4 8	19 4	
Baker . .	6 2	5 4	5 8	6 –	1 3 2	
Greengrocer .	5 6	4 8	4 6	3 9	18 5	8 18 9
Fuel and Lighting—						
Gas . .	4 –	5 –	3 –	4 –	16 –	
Coal . .		1 12 6			1 12 6	2 8 6
Wages and National Health Insurance .				2 11 8	2 11 8	2 11 8
Clothing . .	1 8 –		5 5 –		6 13 –	6 13 –
Laundry . .	5 –	4 9	6 2	6 1	1 2 –	1 2 –
Repairs . .	6 6				6 6	6 6
Cleaning Materials .	2 6	2 0	3 4	2 2	10 –	10 –
Amusements . .	9 –	3 –		3 –	15 –	15 –
Subscriptions, etc. .	12 –	2 –	2 6	1 –	17 6	17 6
Travelling . .	2 6	3 –	4 2	1 4	11 –	11 –
	£5 14 6	4 17 2	8 8 6	5 13 9	24 13 11	24 13 11
					Balance	1 12 1
						£26 6 –

For yearly accounts see pp. 212 and 213.

EXPENDITURE OF INCOME. The amount of money for household expenses having been predetermined, the housewife is in a position to lay it out to the best advantage. To avoid mistakes and misunderstanding, the housekeeping money should be paid over to the spender at regular intervals; if a weekly wage, the husband would hand over all money due to his wife for the upkeep of their home; where a banking account is kept, the requisite sum may be paid quarterly into the wife's account for housekeeping purposes. Such an arrangement confers a necessary independence upon her and gives her better control of the outgoing money. In order to lay it out to the best advantage, and to avoid extravagance and waste in unsuspected directions, two checks should be adopted by all responsible for spending money—the keeping of simple, but accurate, accounts, and a knowledge of food values, marketing, and cooking.

Keeping Accounts. Where a budget is planned in advance, the keeping of accounts is a necessity, otherwise there is no proof of how the money is actually spent, and therefore there is no means of knowing whether the amounts originally decided on are being adhered to. Where there has been no planning, accounts of expenditure are equally valuable, as they are a reference for goods purchased and an examination of the amounts going out will show where undue expenditure is taking place, and where curtailment can be most easily practised.

For systematic keeping of accounts, a daily account book, a weekly book, and a part for monthly or quarterly totals, or a separate book, are generally required. In the *daily book* will be entered all purchases as bought, with date and price, and the totals for each item transferred weekly to the *weekly account book*, together with all weekly payments of any sort. *Quarterly or monthly*, the sum totals for food, clothing, etc., can be entered into its own part, and compared with the budget. In this way, a constant check is kept, which serves also as a reference for future calculations, and for comparison. Specimen pages are shown on pp. 208, 209, 212, 213.

Cash versus Credit. Many people buy goods and run up bills, thinking that they know quite well how the money is going. Unfortunately, the bills are generally large, and may contain items more expensive than desired, and in any case are extremely annoying. Unscrupulous tradesmen sometimes take advantage of the fact to add on pennies here and there, or to increase slightly the amounts bought, hoping that these, if the bill is long enough, will escape detection. To guard against this, as well as to lessen the dangers of debt, cash payments are desirable wherever possible. The only articles not paid for as bought are milk and bread, which should be entered daily into a book and accounts settled weekly, by cash or cheque, after having been carefully verified.

Tradesmen's Books are usually kept by the tradesmen, and submitted weekly or monthly. When this is the case, they frequently call for orders; it is an easy way of buying, but wasteful and extravagant and unsatisfactory in many ways, as the housewife cannot choose for herself, and may be sent much more expensive things than she wants. It is better to do the shopping personally, and either pay cash, or have the amounts entered and pay the bill weekly. It is more satisfactory to pay cash, but if bills are sent in they should not be allowed to run up longer than a week.

People with small means would find paying cash easier than having bills, as these require more ready money for settlement, which is sometimes a difficulty. It will also ensure attention and respect from the tradespeople, who are less likely to take advantage if cash is paid.

The housewife can either make out her own books, or use one already divided up. In all cases, the amount, price, and date should be entered, at any rate in the daily book, to serve as reference. The books should be so arranged that they are clear and definite. In the books showing quarterly or monthly expenditure, only the totals need be entered, and these books will contain such items as education, fuel and light, rent, etc., in addition to food and clothing, but details of each section are not necessary.

Receipts. All bills, whether paid at the time of purchase or weekly, should be receipted. Receipts for small amounts need not be kept, but those for larger items, such as rent, light, fuel, and furniture, are generally kept for reference for several years. Those older than seven years may be destroyed.

MARKETING. Unless the buyer knows how to buy, she cannot get good value for the money she spends. The following hints may be of value to the inexperienced, but actual experience of buying is the best guide.

A knowledge of food values is essential, and can be obtained from any good cookery book or special books on diet. Such knowledge ensures a well-balanced diet and suitable variety. It is well to know the points in choosing meat, game, fish, vegetables, etc., and how to select groceries, and to distinguish between good, bad and indifferent qualities. Much of this only comes by experience, but reference to a cookery book gives valuable detail, and accompanying another person is instructive.

It is cheaper to buy what is in season at various times of the year; foods out of season are very highly priced. The knowledge of such seasonable goods can be obtained from any good cookery book of any size, and by observation and experience.

A knowledge of what is cheap at the moment may be obtained from the newspaper trade reports, and by observations of shop-window prices.

ACCOUNTS FOR YEAR

Yearly Income £500.

Month.	Food.	Rent, Rates, and Taxes.	Fuel and Lighting.	Clothing.	Laundry	Repairs.	Cleaning Materials.	Wages and N.H. Insurance.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
January . .	10 3 3	—	2 8 6	3 5 –	18 –	—	—	2 11 8
February . .	10 10 –	—	2 3 6	3 – –	15 –	5 10 –	8 6	2 11 8
March . . .	8 18 9	20 – –	2 8 6	6 13 –	1 2 –	6 6	10 –	2 11 8
April . . .	11 2 1	—	1 16 –	13 – –	18 6	10 6	4 2	3 – –
May . . .	9 11 9	—	1 14 –	5 10 –	1 – 10	—	2 –	2 11 8
June . . .	9 4 10	20 – –	15 –	6 15 6	19 –	—	2 6	2 11 8
July . . .	7 19 8	—	14 –	10 10 –	10 –	—	—	2 11 8
August . . .	10 12 4	—	19 –	2 10 –	12 8	—	5 –	2 11 8
September . .	11 15 9	20 – –	1 7 6	2 1 8	14 3	1 10 –	2 6	5 – –
October . .	10 13 6	—	1 2 –	6 10 4	16 6	5 –	4 –	2 11 8
November . .	12 12 5	—	1 19 –	5 10 –	1 5 4	—	—	2 11 8
December . .	13 2 8	20 – –	2 2 –	6 19 3	15 10	—	5 6	2 11 8
Totals . .	126 7 –	80 – –	19 9 –	72 4 9	10 7 11	8 2 –	2 4 2	33 16 8

.NDING DECEMBER, 19..

alance Jan. 1st, 19.., £52.

Insurance.	Education.	Medical.	Travelling.	Amusements.	Gifts and Subscriptions, Clubs, Books.	Reserve.	Sundries.	Totals.	Balance at end of Year.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
15 –	9 9 –	—	10 –	1 10 –	12 6	1 6 8	—	33 9 7	
15 –	—	—	19 –	18 –	12 –	1 6 8	1 10 –	34 19 4	
—	—	1 1 –	11 –	15 –	17 6	1 6 8	—	47 1 7	
—	—	2 10 –	9 9	—	5 –	1 6 8	—	35 2 8	
15 –	9 9 –	17 6	11 6	6 3	6 6	1 6 8	—	38 2 8	
—	—	—	11 –	1 – 3	16 –	1 6 8	—	44 2 5	
—	—	—	9 –	—	—	1 6 8	—	24 1 –	
15 –	—	1 1 –	2 10 –	1 7 –	8 –	1 6 8	7 6	29 5 10	
—	18 18 –	5 6	3 5 9	1 5 –	—	1 6 8	10 – –	77 12 7	
—	—	—	10 –	11 –	1 – –	1 6 8	5 6	25 16 2	
15 –	—	—	11 3	1 8 3	4 – –	1 6 8	—	35 19 7	
—	—	1 1 –	12 6	2 10 –	1 10 –	1 6 8	3 – –	55 17 1	
15 –	37 16 –	6 16 –	11 10 9	11 10 9	10 7 6	16 – –	15 3 –	481 10 6	70 9 6

Choose reliable tradesmen, who stock good qualities of goods, and deal fairly with customers.

Dealing at large shops ensures getting goods that are fresh, as the custom is so large that constant supplies are coming in.

It is desirable to compare carefully the quality and price of similar goods in different shops, and to buy the cheapest consistent with good quality. Where it is necessary to economize on pennies, all shopping may be done in this way at a considerable saving of money, as different things are cheaper at different shops; but where a few pence more or less are immaterial, much time and labour can be saved if the housewife buys consistently at the same store, where she should watch for those goods which are a specially priced line, and buy when prices are down.

A housewife who is shrewd in buying and knows what she is about commands the respect of tradespeople, especially if she becomes known at any one shop, and will secure prompt attention.

Money is saved, and a much more delicious article obtained, by making all preserves and pickles at home, and more can be obtained for the money. A watch should be kept on prices of fruit, etc., and sugar, and each bought at a favourable moment.

Finally, the housewife should use her own judgment, and not be talked into buying a thing she does not want.

THRIFT AND ECONOMY. Both these terms have in the past been too often taken to denote meanness or parsimony; and to designate a housewife as "economical" was scarcely considered complimentary. As a matter of fact, thrift and economy are concerned with the using without waste, and without unnecessary expenditure, and do not imply avoidance of expenditure, as so often thought. The thrifty housewife has an eye for value, and can turn to good account many "unconsidered trifles" which might otherwise be thrown away as useless. By so doing, money is saved on odds and ends: for example, cutting up old materials for rubbers instead of buying new ones; utilizing left-over scraps of food to make a tasty dish; improvising handy little articles instead of going without, or purchasing expensive ones.

Economy is shown in such things as the buying of good quality goods rather than spending less money on inferior articles that will wear out sooner or give less satisfaction, and will require more frequent renewal. True economy is not ultimately concerned with the money spent, but on the value obtained for the money. However much money may be available, waste and extravagance are unjustifiable; the economical housekeeper will see that all the money spent is returned in value, that an adequate return is made, and that waste of food and materials is eliminated. It will be perceived that all this bears a close resemblance to costing; and the housewife who has habitually exercised true thrift and economy has also acted in accordance with the principles of costing.

CHAPTER XX

THE LABOUR-SAVING HOUSE: EFFICIENCIES; FUEL; AND DOMESTIC HELPS

LABOUR-SAVING PLAN. The chief factor in labour-saving in the house is the plan. In choosing her house the housewife will have remembered this, and have avoided obvious difficulties as far as possible. Unless she is fortunate enough to obtain an exceptionally well-planned house, however, she will probably find it necessary to alter and improve in several respects. In some houses many stairs are a drawback; but if a house is over large for the occupants, the entire top floor may be shut up, except for special or occasional use, or it may be converted into a flat.

Some of the following points have already been dealt with; they are here summarized for convenience—

Cupboards, to be useful, should be ample, well-ventilated and placed in convenient places. A cupboard for cleaning materials and equipment should be on the bathroom floor, if there is no existing pantry or cupboard.

Water Supply. The use of lavatory basins in bedrooms instead of washstands saves much labour. In any case, a large wash basin in the bathroom can be used by the family.

A sink, taps, and drain should be in a housemaid's pantry, but where this is absent extra hot and cold taps in the bathroom or elsewhere are economical for the filling of cans, etc. Incidentally this saves much hard use on the bathroom enamel, as no cans are filled from the bath taps. There should be a properly made zinc or lead sink and drain underneath, fitted with a grid to prevent solid matter going down.

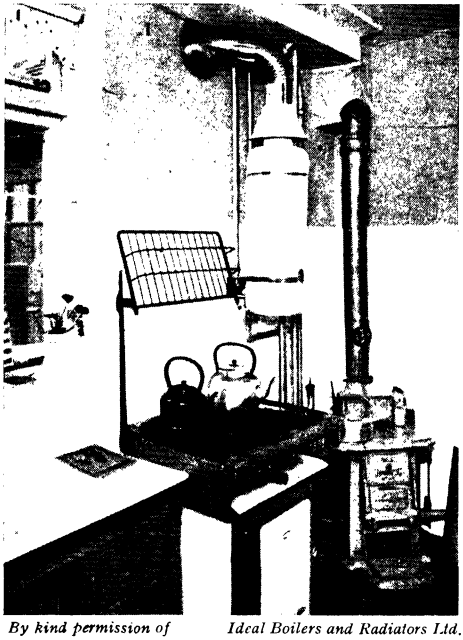
Warming, Heating, and Lighting have already been discussed. The housewife must decide for herself which arrangement will best meet the requirements of her house and family; but a good supply of hot water is labour-saving. An arrangement adopted by many people is to remove the range, and install a small boiler, heated by coke or anthracite, and do all cooking by gas or electricity. (Fig. 64.)

A gas circulator may be preferred to the boiler; radiators may be attached to the latter for heating, if feasible, and it provides a good incinerator; the gas circulator is convenient, as it heats the water for the sink, lavatory basins, and bath, but is expensive except on a very small scale. The arrangements for heating the living-rooms will be made as labour-saving as possible; in rooms that are little used, a gas or electric fire is convenient. In the

FIG. 63.—AN UP-TO-DATE PARLOUR-KITCHEN.

Note sink and draining board on the right, under the window, with tiled walls the parlour grate and the independent boiler.

living-room, if a coal fire is preferred, a good type of modern grate or an adapted old grate should be used; for dining-room use an anthracite stove is found very satisfactory. All metal parts, whether of cooking or of heating installations, should require little labour spent on them and, if possible, no blackleading at all. The use of stainless steel will probably increase, and this is practically ideal for stoves and grates; at the present time it is too expensive for general use.



By kind permission of *Ideal Boilers and Radiators Ltd.*

FIG. 64.—SHOWING INDEPENDENT BOILER, CONNECTED TO WORK IN CONJUNCTION WITH A GAS CIRCULATOR DURING THE SUMMER MONTHS.

Labour-saving Materials used in the construction of the house, such as hard-wood floors, are easily kept clean, and glazed tiles in bathroom and lavatory also save labour. Rounded corners at the floor level collect less dust and are more readily swept than the usual ones. Where these things do not exist, the housewife can lessen her labour by having paint, or varnished paper, in the bathroom and lavatory; staining her floors, and covering them with carpet squares, or rugs; and if she desires more modern corners she can have triangular pieces of wood placed along the bottom of the skirting boards. Plastics are becoming increasingly helpful.

Furniture, Fitments, and Decorations have also been discussed in a previous chapter. The essential points are—

They should be of material easily cleaned:

Taps, fittings, door-handles, knockers, etc., of nickel, porcelain, or plastic ware; *hearths* tiled, and surrounds to match; *grates, fire-irons* and *fenders of rustless steel* or with an easily cleaned finish; *stair-rods* of wood, or replaced by carpet clips; *varnished woodwork* instead of paint—i.e. doors, skirtings, etc.

Built-in furniture wherever possible.

Closed cupboards rather than open shelves.

All furniture designed to lessen labour, simple rather than intricate; easy to move, and to clean underneath; no dust traps.

Rooms should not be crowded, all articles designed for use, comfort or beauty; everything must have a purpose.

Avoid excessive display of pictures, photographs, knick-knacks, and metal articles requiring constant cleaning; where the latter are exposed, have them lacquered.

Draperies should not touch the floor, and should not be too heavy for proper cleaning.

Cleaning Appliances. These should be suitable, of good quality and design to save labour.

Some labour-saving appliances which every household should have are the following—

Carpet-sweeper for daily work; a vacuum cleaner for weekly cleaning; if with fittings its usefulness is increased.

Polisher for linoleum and polished wood, fitted with long handle. A home-made one can be made by well wrapping a heavy brick in flannel with a good pad underneath, or by padding and covering an old broom-head unfit for further sweeping.

A washing machine, if much washing is done at home.

A cornice brush, for brushing the ceilings, walls, and picture rails saves getting up on steps.

A mop for stone floors and steps.

LABOUR-SAVING DEVICES. Much of the labour-saving equipment on the market is expensive, and in buying, therefore, it is essential that the result will justify the expenditure. Apparatus bought, but rarely used, is extravagant, as it does not give back its value in saving work or time. Nothing should be bought that is not intended for a definite purpose, and all workers should be taught and encouraged to use it. All labour-saving appliances should be efficient, durable, and economical in time and labour; be not too complicated to understand, and simple to manipulate and to keep in good order. They should be well made and finished, and should not harm the material upon which they work. Some so-called "labour-saving" devices are not efficient in carrying out their intended purpose and are so difficult and intricate to manage that they are hindrances rather than helps.

Suggested Labour-saving Devices. Stainless steel for knives, and wherever possible elsewhere in the house. If steel knives are used, a good knife-cleaning machine should be employed.

Casseroles and glassware for cookery; aluminium or stainless steel for pans and saucepans.

Gas copper, and electric or gas irons.

Mincer, parsley chopper, and any other culinary utensils designed to save labour—such as egg-beaters, potato-peelers, etc.

A movable table or service wagon for kitchen and dining-room use.

Choose equipment that will not itself require much labour to keep clean and in order; e.g. enamel bowls and pails, rather than of zinc.

A labour-saving sink.

On Planning Work. Work should be done in such a way that further work is not created; e.g. a wooden table should be protected with oilcloth or paper for dirty work, so that table need not be scrubbed.

Work should not be done in such a way that work already finished is again made dirty; e.g. in cleaning, begin at highest point, or the clean part will suffer; it would be unwise to sweep hall before doing staircase.

Work involving use of certain equipment should be done at the same time if possible; e.g. if two rooms are being turned out, get each to the same stage before using the vacuum.

When possible to do all work upstairs before coming to a lower floor; if there is only one worker, leave directions for tradesmen on a slate or paper at back door to minimize running up and down stairs.

Adequate preparation and forethought before starting work saves time and labour, and prevents subsequent going about to fetch things.

Sufficient time should be allotted to the various items of work, and embodied in time-table. (*See* Chapter XXI.)

EFFICIENCY AND RUNNING COSTS. Much is said and written at the present time about "efficiency," and the average housewife may be somewhat at a loss to understand what exactly is meant by the term. It may be explained shortly as *the amount of useful work done by any piece of apparatus compared with its capabilities, and the energy expended in making it work.* The exact scientific meaning and determination of efficiency is a matter of great complexity and cannot be entered into here; but some idea of the efficiency of the various working parts of a house is useful and interesting to all concerned with home problems. We can judge of the efficiency of a thing by finding out whether it is doing all it is supposed to do with the minimum amount of cost, labour, and time spent upon it. For instance, a vacuum cleaner that took up the time of two people for half-an-hour, and did not remove the

maximum amount of dust could not be considered efficient. Again, a stove that burnt much fuel, but did not produce a sufficiently satisfactory result would be considered wasteful and inefficient. As a matter of fact, it is more difficult to get high efficiencies in connection with heat than in almost anything, since heat leaks away so rapidly that it is almost impossible, even with most careful insulation, to guard against waste. The efficiency of various kinds of heating apparatus has been worked out in elaborate experiments, and in most cases the figure is low. The efficiency of a range or gas oven is the proportion of heat employed in doing useful work compared with the total amount of heat available for work in the fuel. The amount of heat contained in any given quality and quantity of fuel is a fixed amount, and the method of burning that fuel, and the construction of the apparatus, have a great influence on the proportion of that heat actually used in doing work. The better the construction, and the more carefully the combustion is regulated, the higher the efficiency of the apparatus. Attempts have frequently been made to work out the efficiencies of solid fuels, gas, and electricity for comparison. This can be done for gas and electricity, but those for coal and coke and other solid fuels are much more difficult to reduce to a set figure, as some of the heat is required for warming rooms, etc. The following figures give some idea of the average efficiency of gas and electrical apparatus for cooking purposes.

	Oven	*Hotplate*	*Grill*
Gas	3–5%	40–50%	10–17%
Electricity	5–25%	35–60%	15–25%

The wide limits are caused by variations in conditions of use and in the kind of food prepared. In modern appliances heat is conserved as much as possible, by improved methods of ensuring more complete combustion of fuels and by insulation, and very little is allowed to waste. Thus, in kitchens in which modern cookers (including those burning solid fuels such as coal and anthracite) are used very little warming up of the room itself takes place. Allowance may have to be made for this, and a form of subsidiary heating is sometimes required.

The housewife who is curious to find out the cost of running her range or gas stove can make interesting experiments which will give her a rough estimate, though she cannot work out the exact efficiency. To find the cost of cooking a dinner, the weight of coal and wood used in lighting the fire must be known, and also the weight burnt during the cooking. A simple way of doing the latter is to weigh the scuttle full, and again after use, the difference giving the weight of coal used. Knowing the amount of fuel consumed, and the length of time the fire is burning, the cost per hour can be worked out, and the average cost per cooking day could be calculated. If the object is to estimate for cooking only, the water damper must of course be kept shut. A similar experiment would give

the approximate cost of heating water only for, say, washing-up, and two or three baths. The cost of labour should be included in these experiments by putting a money value on the time taken in cleaning and stoking. Experiments with gas are easier to carry out, as the amount used is easily read from the meter ; no burners except those under observation must be going at the same time, of course, and the cost of labour should again be included, especially if comparisons are being made between coal and gas.

Other costs that could be worked out are those of electric bulbs and other electric appliances ; the cost of cooking by oil, both by a stove of the Primus type, and by one burning oil without pressure. Other problems may suggest themselves the working out of which would be of no little interest.

SERVANTS AND EMPLOYERS. Engaging Servants. There are various ways of engaging servants; the usual ones are—

A housewife seeking a maid generally considers herself fortunate if she can hear of one through friends ; in this way she is able to hear more about the girl than would otherwise be possible, and it is usually the most satisfactory method.

Advertising in a newspaper is a method sometimes successful. Exact particulars of the type of maid required, the number in family, and the wages offered should be inserted.

Applying at a registry office is another means of obtaining maids ; it is essential, however, to go to a well-known and well-established office. The fee, payable by the mistress when she is suited, varies with the locality and the kind of maid required.

A maid may be obtained also from a charitable institution, but this course should be followed only if the mistress is prepared to look after and take an interest in the girl. She must inquire carefully into her previous history and character, especially if there are children in the family. It must be remembered that the change from the disciplined life of an institution to one of comparative freedom may unsettle the girl. Care should be taken to apply to such institutions as are really interested in and train the girls, and very good servants are sometimes made of them.

A mistress should not engage a young untrained girl unless she has patience to train her, or has other servants who will do so.

Interviewing a Servant. It is advisable to have the interview at the mistress's house, if possible, so that the girl can see over it, and thus get a clear idea of the work expected from her. Her duties should be stated definitely, and she should be questioned on her capabilities. The reason for leaving her last place should be ascertained, and the length of time she was in it ; if it was a short time, she should be questioned as to the longest time spent in any one situation. Her previous wages, and what she has in the way of uniform should be ascertained. Her health, family, and home conditions should be inquired into, but with tact ; much

can be learnt with regard to a girl's character and type from her appearance, tone, and manner. During the interview the girl should have ample opportunity for asking questions, and should know clearly what is expected of her. Any expenses she may have incurred in coming to the interview are paid by the mistress, whether she engages her or not.

It is essential to have a character of a girl before engaging her. A written one should be avoided ; where this is necessary it is considered in the nature of a confidential report and should contain a true statement of the girl's character, and a personal interview should be arranged with her former mistress, if possible. Information on the following points should be obtained—Whether the girl is neat and tidy in person and work ; whether she is honest and truthful, and of good moral character ; good tempered and healthy ; a good worker ; reason for leaving.

A mistress cannot be compelled to give a character to the maid's new mistress, but if she does not do so, it means that the maid has done something definitely wrong, and to refuse it for a minor offence might hinder the girl unnecessarily from obtaining work.

When the maid is definitely engaged, there should be a written agreement at the time stating—

The amount of wages to be paid ; it is understood that a girl who lives in has her board and lodging and her washing arranged for, and will necessarily receive less than a girl who goes away to sleep and is responsible for her own laundry.

The duties for which the girl is engaged.

The length of notice on either side to be given when it is desired to terminate the engagement. Whatever notice is agreed upon must be given by either side, otherwise the other party may demand wages in lieu of notice.

The amount of free time to be given and holidays.

Breakages—by arrangement.

Breakages. The money for breakages cannot be deducted from wages, and a maid cannot be made to pay unless it is in the agreement. It is impossible often for her to pay the full value of an article broken, but it is advisable for her to contribute something, as it will help to make her more careful.

Where several maids are kept, they could pay a few pence every week towards the breakages. At the end of the month, if not used, the money can be divided between them.

Dismissals. A maid cannot be dismissed at a moment's notice except for gravely immoral conduct, such as theft, drunkenness, or immorality. Wages are paid up to the day of dismissal.

Wages. Except where a maid is engaged in a temporary capacity and is paid weekly, or a charwoman is employed by the hour or day and paid daily, wages are generally paid monthly. The mistress should have a wage book, wherein she enters the date, and

full amount due, the insurance payable by maid, and the amount received by maid after insurance has been deducted. This should be signed by the maid on receiving the money. It is often usual during the first month, if the girl has been previously out of work, to ask at the end of a fortnight if she would like part of her wages then.

The mistress should make it known that if the girl does well and stays with her, her wages will be increased each year; at the end of a certain period (three or five years) an extra increase might be made. It is usual to give a fortnight's holiday to each maid every year; if, however, it is desired to shut up the house and send her away for longer, board wages must be given; this will be the ordinary wages with extra for board and lodging. If the house is left to the care of servants, they receive money for food only, the amount varying with the cost of living. In some houses where a large staff is kept, the servants are put on board wages and are allowed to cater for themselves throughout the year.

The Management of the Workers. The housewife who has one or more workers in her home must realize that much of the ease of running will depend on the arrangement of their work, and a consideration of their welfare.

Each maid on arrival should be given a time-table, indicating her daily and special duties, and the times at and in which she is expected to do them; also showing her off-time. These time-tables should not overlap in the arrangement of the work, and work requiring the same materials should not be scheduled to be done at the same time by different people, unless there are duplicates.

Each worker should be made to feel responsible for the work given her. She should be shown the equipment for her work, with an inventory of it; the care with which it has been kept should be pointed out, and she should be made responsible for continuing it.

If several maids are kept, each should have her own cupboard in which to keep her own special equipment, and which should be in a position most suited to her work. If a shelf or drawer can be spared in the kitchen for her private use, this greatly helps to promote a harmonious feeling, but she should not be allowed to abuse the privilege.

The housewife should have good practical knowledge of housework, and if the work is done badly, through either ignorance or carelessness, she should show how she wishes it to be done. A mistress should have a high standard of work, and, if she fails to correct her maid when necessary for fear she might leave, will never get good work or respect from her. On the other hand, she must not be too exacting or impatient, or she will again not get the best work. She should not lose her temper, but when necessary to correct, do it with quietness and dignity; she should also make a point of praising all work well done, and encourage as well as blame.

Happy relations between mistress and maid should be aimed at.

The mistress should make it possible for the maid to respect her, and must therefore be just in all her dealings, tidy and neat in her personal habits, and give her orders reasonably and quietly. If in addition the maid can feel that the mistress takes an interest in her, her pleasures, her people, and her welfare, she will be a willing helper.

The housewife should ascertain if the maid has friends or relations with whom she can spend her free time, and if not, she should try and arrange for her to join a social club, or classes in which she is interested. She should encourage her to make and mend her own clothing, interest her in various kinds of handwork, and give her an opportunity of reading daily papers and good books. She should do all she can, in fact, to make her life as full of interest as circumstances permit.

Free time, where more than one maid is kept, is usually arranged so that there is always one on duty who does the work of the one who is out, but it is often a great treat for the servants of one household to go out together, and it will make for contentment if this is arranged occasionally.

The Health of Workers should be watched, and if they are not fit to do work, should receive medical attention. The National Insurance Acts now ensure that pension, sickness, and other benefits can be obtained by all.

Insurance and Income Tax. Employers and employees should make themselves familiar with the current regulations in force regarding payments necessary for these, and the benefits obtainable. Information can be obtained from Stationery Office booklets, *Whitaker's Almanac*, etc.

CHAPTER XXI

TIME-TABLES

THE housewife having a knowledge of what the work in a house means, and having arranged the house to the best of her ability to facilitate easy running, and procured equipment that will lighten labour and reduce the time spent, will endeavour by careful planning to arrange a time-table that will enable the worker or workers easily to get through all that must be done. In the following pages, examples of time-tables are given in detail for a household employing one maid, and for a working-class family. Time-tables for larger establishments are not included, but the duties of extra servants are indicated. These plans are merely suggestive, not in any way implying that such an arrangement is the only possible one. Other kinds of help will require different arrangements.

A suggested plan of work where one maid is kept is drawn up below. It is not, of course, expected that such a plan will be considered as a hard and fast one, but it serves as an indication of how work may be arranged. Each family must fit its work according to its own circumstances. The following plan has been drawn up in accordance with the principles enumerated in Chapter XVIII (Costing), but no definite times for each duty are given; these are helpful if worked out and included in the time-table given to the maid—

ONE-MAID HOUSE. The maid is resident; where she is employed daily, certain modifications would be necessary, but the bulk of the work would be the same. The family consists of parents and two children, a boy aged twelve years and a girl of fourteen. The father is a solicitor. The house has eight rooms and is situated in a provincial town, where the children attend day schools, and are able to return home for the midday meal. The cooking is done by a gas stove, the water being heated by an independent boiler which also supplies at need three radiators, one in the dining-room, hall and landing respectively. In winter this stove is kept in night and day for a week at a time, and burns coke, anthracite, or a mixture of both; in the summer, it is lighted for a short time daily, the water keeping sufficiently hot owing to the insulated cistern. The dining-room radiator is supplemented by a gas stove. The sitting-room, used daily as a living-room, has a modern barless grate. The maid is able to do plain cooking, and to look after dishes prepared by the mistress, who makes all the cakes and pastry, supper dishes, re-heated dishes, and puddings.

The water is hot in the morning even in summer time, and the family use the lavatory basin and bath for washing.

The Maid's Duties: Daily Work—

6.30 a.m. Rise.
7.0–8.0. Call family, collect shoes for cleaning.
Pull up blinds and ventilate house.
Attend to stove in kitchen, fill kettle with fresh drinking water (after allowing water to run a few minutes), and put it on stove to begin heating.
If necessary, attend to sitting-room grate, lay fire, and fill coal box.
Sweep step, cleaning it if necessary.
Do daily work in dining-room, and lay breakfast table.
Prepare and cook breakfast.
8.0. Serve breakfast. Have own meal; and when finished clean shoes.
8.40. Empty slops, and make beds, which have been left airing by the respective members of the family. Do daily work in bedrooms, bathroom, lavatory, landing, stairs, and hall.
Prepare vegetables for dinner, and get ready any pans that may be required for cooking that meal.
10.0. Do special work for the day, during which dinner must receive attention from time to time if the mistress is not in the kitchen. At 10.30 a pause of ten minutes for a cup of cocoa.
12.30. Lay the table for dinner, and dish up.
1.0. Serve dinner; have own meal.
1.45. Clear dinner table. Wash up dinner things.
Fetch fuel sufficient to stoke boiler for the evening and next morning; and get ready paper and wood for laying sitting-room fire next day.
Do daily work in kitchen, and leave service wagon prepared for tea.
Lay dining-room table for supper; fill kettle for tea, and put to begin heating on boiler.
3.15. Change dress.
4.15. Serve tea.

The bedrooms are prepared every night; the time at which this is done depends on the outings, and ordinarily should be done between 7 and 8 p.m.; on evenings out, before going out; on days out, by arrangement with mistress.

In the absence of the maid, the mistress, helped if possible by the rest of the family, will attend to the preparation, clearing away, and washing-up of the meals.

Special Work

Monday.	*Tuesday.*	*Wednesday.*	*Thursday.*	*Friday.*	*Saturday.*
Weekly cleaning of sitting-room.	Cleaning of one of the small bedrooms (each is done once a fortnight) and washing of handkerchiefs and cloths.	Weekly cleaning of dining-room and large bedroom alternately.	Weekly cleaning of bathroom, lavatory and either maid's or spare room, or other special work.	Weekly cleaning of kitchen. *N.B.* Maid rises ½ hour earlier and does stove before breakfast. Weekly cleaning of larder, etc.	Weekly cleaning of landing, stairs, hall, back premises, including yard and gullies.

Arrangements of Time after Tea

4.45–6.45. Outing 7. Prepare supper. 7.15. Serve supper. 7.45. Wash up tea and supper things. 8–10. Personal sewing, reading, etc.	5–10 Outing.	5–7. Silver cleaned. 7. Prepare supper. 7–15. Serve supper. 7.45. Wash up. 8–10. Mending. Personal reading, etc.	3–10 Outin	5–7. Cleaning of any kitchen utensils which require polishing. 7. Prepare supper. 7.15. Serve supper. 7.45. Wash up. 8–10. Read, etc	4.45–6.45. Outing. Same as Monday.

Arrangement of Outings on Sundays. Only necessary work is done on Sundays, and the arrangement for outings is as follows—

First and 3rd Sundays in the month; free from the time washing up dinner things is finished till 10 p.m.

Second and 5th Sundays from 10.30–1, and from 5–8. The maid might be allowed, at the mistress' discretion, to invite a friend to tea on these Sundays.

Fourth Sunday, from 5–10 o'clock.

PLAN OF WORK DONE BY MISTRESS. Daily—

7 a.m. Rise.
8.0. Breakfast.
8.30. Clear away breakfast things, and wash them up.
Help make own bed.
Inspect larder and plan meals for following day.
Prepare any dishes that are required.
Sweeping and dusting in sitting-room; this cannot be done sooner, as the maid will have the carpet sweeper upstairs.
Special work each morning, which must be done at the most convenient time.

The housewife is usually busy until dinner time. Although, probably, there is some cooking daily, an effort is made twice a week to prepare for at least two days.

The bulk of the shopping is done once weekly. Perishable food is bought as required; if meals are planned ahead, this may be bought a day in advance.

Special Work

Monday.	*Tuesday.*	*Wednesday.*	*Thursday.*	*Friday.*	*Saturday.*
Sorting of linen to be sent to laundry. Washing of silks and woollens; and steeping of handkerchiefs and kitchen cloths.	Household mending. Ironing.	Special cooking day.	Making shopping lists; and special care to store-room. Mending.	Shopping. Unpacking, checking, and airing of laundry. Special care to linen cupboard	Special cooking day.

SUGGESTED PLAN OF WORK WITH NO OUTSIDE HELP. The family consists of parents and four children: a girl aged 13, a boy of 11, and twins, a boy and a girl aged 9: all the children attend an elementary school, which is a few minutes' walk from the house.

The house, one of a long row, is situated in a south-east suburb of London, and has three bedrooms, a sitting-room, a kitchen, and scullery. The latter contains a bath with hot and cold water laid on, and a gas-heated copper, and the sink. A house with a separate bathroom was not obtainable in this locality for the rent which could be afforded. The kitchen range is of the closed portable type, small but good, having an oven, and a self-filling boiler. In addition there is a gas ring. The sitting-room is heated by a gas fire.

The husband is employed by a house decorator, and earns about £5 a week. The children have been brought up to be useful in the home, and are scouts or guides, and so have healthy outside interests.

At night the scullery-bathroom is used in the latter capacity, and the entire family wash in it in turn; in the morning, owing to pressure of time, the two girls wash in their own room.

Daily Work—

6.30. The mother rises and calls family.

7–7.45. Draws up blinds and ventilates house.
Attends to kitchen range, lays and lights fire; fills kettle with fresh drinking water, and puts on range.
Does daily work in kitchen.
Prepares and cooks breakfast.

7.15–7.45. The younger girl lays breakfast table; the elder empties slops, and sees beds are airing properly; sweeps and if necessary cleans doorstep.

7.15–7.45.	The younger boy is the last person to wash in scullery, and must leave the basin clean, wipe floor, and see that all washing apparatus is put tidily away.
	The elder boy cleans boots.
	The father fetches coal, chops wood when necessary, and cleans knives.
7.45.	The family breakfast.
8.15.	Father goes to work ; the elder girl makes smaller beds, and helps her mother make large one. The two younger children clear away breakfast, and dry while their mother washes up. The elder boy does any work or errands necessary.
8.40.	Children leave off work, and get tidy for school.
8.50.	Children go to school. The mother finishes washing up, and considers meals for day, and following day.
	Prepares midday meal and any other necessary cooking. Bedrooms, landing, stairs, passage and sitting-room are swept and dusted.
	Special work of day is done, and attention given to cooking between whiles.
12.10.	Children return from school ; get tidy, and lay table for dinner.
12.30.	Father returns, dinner is served.
1 p.m.–1.40.	Table is cleared, dinner things washed up, and kitchen tidied by mother, children helping.
1.15.	Father returns to work.
1.40.	Children tidy themselves, and return to school at 1.50.
1.50.	Mother rests for half an hour, or reads.
	Tidies herself and goes for walk, or for necessary shopping.
4.45.	Children return from school, mother from her walk.
	The former get tidy, and lay table for meal. Mother gets meal ready, helped by elder girl.
5.30.	Father returns ; high tea is served.
6.	The two elder children clear away and wash up.
	Father reads, mother sews, younger children play.
7.	The twins go to bed.
8.30.	The elder children go to bed. The father is out twice a week at his club, the other evenings he generally spends at home, often reading aloud to his wife, who has plenty of needlework, mending, and making to do.
9.	The parents have cocoa and something to eat, and retire to bed later.

Special Work. This is done by the housewife except on Saturdays, when all the children help ; the elder girl helps with the ironing of plain articles, and she can look after any cooking.

Sundays. As little work as possible is done on Sunday, and all the members of the family help. Whole family go for a walk after children come from Sunday school, and often to church in evening. Tea is taken at 5 p.m. and later cocoa with bread and butter for the children, and something for the parents is provided.

Special Work—

Monday.	*Tuesday.*	*Wednesday.*	*Thursday.*	*Friday.*	*Saturday.*
Weekly cleaning of sitting-room. Brushing, folding and putting away Sunday garments of family. Sorting articles for weekly wash and necessary preparation for same, including planning and preparation of Tuesday's dinner.	Housewife rises half-hour earlier. Weekly wash, and cleaning of scullery. *N.B.* Mother does not generally finish till afternoon, and often does not go out on this day.	Any cakes and pastry made while irons are heating. Washing finished by mangling and ironing. *N.B.* This is often not finished till after tea.	Weekly cleaning of large bedroom, *or* the two small ones. Mother attends her guild from 2.20-4.30.	Housewife rises half-hour earlier, cleans flues of range; later does weekly cleaning of kitchen.	Weekly cleaning of landing, stairs, passage, meat-safe, lavatory, yard gulleys; children help, and with polishing of any metals also.

WORK WHERE TWO OR MORE SERVANTS ARE EMPLOYED. Where two or more servants are kept, the duties of each should be clearly specified by the mistress, and a time-table giving details of the work to be done at stated times should be allotted to each maid. It is not proposed to give here a detailed time-table of each maid's work, but to indicate the division of duties that is usually made.

Two Maids. These generally are a cook-general and a housemaid, or house-parlourmaid.

The *cook-general* is responsible for the cooking; for the care of the kitchen and scullery and their contents; the larder, meat safe, and storeroom; also for the dining-room, front-door steps, hall, and any passages on the ground floor, and basement if any; the yard and back premises, and her own bedroom. She will answer the front-door bell in the morning and the back-door bell all day. She is responsible for filling kitchen and sitting-room coal scuttles. The amount of washing done at home depends on the arrangement, but she should wash and finish her own cloths. She does the washing-up after meals, except the silver, glass, and good china tea-things.

The *house-parlourmaid* has charge of the drawing-room and second sitting-room, if any; the bedrooms, bathrooms, lavatory, stairs, and housemaid's cupboard and pantry; she is responsible for the silver, glass, and best china. She answers all indoor bells, and the front-door bell in the afternoon and evening. She is responsible for sorting linen for the laundry and checking it on

return, unless the mistress prefers to do this herself. She lays tables for meals, and clears away, waiting at table if required ; and attends to sitting-room fires, and cleans the shoes. If she gives help with children her position is often that of nurse-housemaid rather than house-parlourmaid.

Three Maids. Where there are three maids, they will probably be cook, housemaid and parlourmaid, and the work shared as follows—

The *cook* has charge of the cooking, cleaning of kitchen, scullery and contents, and of the larder, meat safe, and storeroom ; front-door steps, door and hall, back premises and her own bedroom. A certain amount of washing-up should fall to her share, and she should be responsible for keeping her own cloths clean. She must answer the back-door bell whenever necessary.

The *parlourmaid* has charge of all sitting-rooms, any lobbies or passages on ground floor, and pantry. She answers the front-door and sitting-room bells, lays tables, waits at meals, and clears away ; she is responsible for all silver, glass, and delicate china. She attends to fires, prepares afternoon tea, mends table-linen, and waits upon the members of the family. She has the care of flowers for table use, unless this is done by the mistress or daughter of the house.

The *housemaid* has charge of all bedrooms, except the cook's, and is usually assisted by the parlourmaid in bedmaking ; in return, she gives help in the weekly cleaning of large sitting-rooms, and in waiting at dinner. She is responsible for the cleaning of the bathrooms, lavatory, upstair passages and stairs ; she sorts, checks, and mends household linen ; and may have charge of the washing of woollens. She cleans shoes, answers bedroom bells, and brings hot water when required ; she may also be responsible for brushing the gentlemen's clothes, and for putting out dresses, etc., for dinner.

Larger Staffs. In larger establishments the cook may be assisted by a kitchen-maid or scullery-maid or both, or she may share the services of a between-maid with the housemaid or nurse. The kitchen-maid waits on the cook, and makes the necessary preparation for her cooking. The scullery-maid prepares vegetables, washes up pots and pans, and utensils from cook's work, and does the rougher cleaning of the kitchen premises. The between-maid will do what is required of her, and the rougher work of the kitchen, the amount depending on whether a scullery- or kitchen-maid is kept. There may be under-parlour and housemaids, according to size of establishment. A lady's maid is responsible for her mistress's wardrobe and waits upon her.

There is generally a housekeeper where a large staff is kept, who is responsible for the supervision of the maids' work and welfare, in place of her mistress ; and orders stores, plans meals and keeps accounts ; she engages and dismisses the women servants.

Menservants. Licences must be taken out for each male servant employed. The butler is the most responsible member of the staff, and upon him falls the care of the silver and the wine cellar and of settling accounts. He is responsible for the care of his master's study, the library, and billiard-room. He superintends the waiting at table and serves the wine and does other waiting usually done by a parlourmaid. He is responsible for, and directs, the work of other menservants.

The *footman* works under the butler, and is responsible to him. He waits at table, and does a good deal of housework, such as carrying coals, doing grates, windows, knives, and shoes. He calls the men of the household and waits on them as required.

The *valet* waits on his master and is responsible for his clothes.

CHAPTER XXII

MANAGEMENT OF STOREROOM; LARDER; COAL CELLAR; DISPOSAL OF HOUSEHOLD REFUSE

STOREROOM. The housewife will find it a considerable economy if she has somewhere to store non-perishable goods, for not only is the retail price sometimes less when larger quantities are bought, but in some cases the articles improve with keeping. Also, much time is saved, as shopping is minimized. The management of the storeroom is one of the most important tests of a good housekeeper, as it requires method and forethought, and careful, intelligent buying.

Houses in the country are sometimes provided with a storeroom, also houses of any size in towns; but flats and small houses will have probably only a cupboard, generally with too little shelf room. Extra shelves can usually be added without much difficulty or expense.

A storeroom should be thoroughly dry, but cool and well ventilated. The walls, if not tiled, should be whitewashed, and there should be plenty of shelves or cupboards, a table, scales, a slate for jotting down requirements, and a book wherein can be written an inventory of stores purchased, with dates and prices; this is useful for future reference. The shelves are better if not too wide, as then the contents are more easily seen.

If there are several cupboards, one can be devoted to home-made preserves, jams, bottled fruits, pickles, etc.; another to food such as currants, cereals, sugar, and a third to cleaning materials, candles, matches, and the like. Any new utensils which may be in reserve should have a place, also dish papers, pie frills and any other articles required for occasional use. There should also be storage room for extra china and glass, if no china pantry for storing these is provided. Where there are no cupboards, shelves will be used, and the arrangement must be such that cleaning materials, dry foodstuffs and preserves are kept separate. Poisons, if kept in the store, must be clearly labelled, and kept under lock and key, away from the food.

Preserves. It is well not to put the preserves on the top shelf, as this is the warmest place, and these are best kept as cool, though as dry, as possible.

Dry Foods. The housewife must have some knowledge of the keeping qualities of these, and the best method of storing.

Flour. The amount bought depends on the rate at which it is used. Where bread is made at home, large quantities must be

purchased; but as it will be used up fairly rapidly, this is quite satisfactory. If, however, flour is not used very quickly, smaller quantities should be bought at more frequent intervals. Unless the consumption is fairly rapid, flour, if kept long, becomes musty, and is liable to be attacked by mites, which render it unfit for use. In any case, flour should always be stored in enamel, wooden, or galvanized iron bins, with covers, and kept very dry. All traces of the previous stock should be cleared out before fresh flour is put in, or mustiness will develop. When buying, choose a good household flour that does not contain a raising agent. A knowledge of the characteristics of a good-grade flour should be possessed by every housewife.

Cereals. Rice, tapioca, barley, and macaroni may be bought in moderate quantities if kept in covered vessels; oatmeal, however, should be bought in smaller quantities, as it turns rancid very quickly. Semolina should be bought only in small quantities, as it consists of the germ of the wheat grain, and the fat contained in it goes rancid if the material is kept for any time.

Dried Fruits. These may be bought in fairly large quantities, and kept very dry. It is wise not to re-stock just before the autumn arrival of the new season's fruit, but to wait and buy fresh supplies when they come.

Pulse Foods. These, like cereals, should only be bought in moderate quantities.

Tea. This may be purchased in large quantities if kept in proper leadfoil-lined boxes or chests. Otherwise it may be bought in packets and stored in an airtight tin, but it is not wise to buy a large quantity and keep it loose in a tin, as it deteriorates after awhile.

Coffee. This should be purchased only as required, as it loses its flavour very rapidly.

Sugar. This may be purchased in large quantities, as it does not deteriorate. It must, however, be kept very dry. As the prices vary, it is well to lay in stocks when they are favourable.

Tinned and Packet Goods. These may be bought and kept in reserve in any quantity, and any other household stores in reserve should be kept as airtight as possible.

Cleaning Materials. Soap. This is more economical in use if allowed to dry and harden first, therefore a large quantity should be bought at a time, cut up into pieces of convenient size by means of string, and arranged in a pile in such a manner that air can circulate round each piece. A good yellow soap should be bought, that does not contain excess of soda; this can be ascertained when soap is dried, as an inferior quality, or one with much soda, has a white deposit of soda on it. In buying soap, choose the driest, which will contain less water, and will, therefore, be more economical.

Soda. This is usually cheaper if bought in large quantities. It loses water on storing, becoming white, opaque, and powdery, and is stronger than the clear crystalline form. Those who use it should therefore be made aware of this fact, and cautioned to use less.

Other cleaning materials should be bought in as reserve stock, as it will save much time otherwise spent in shopping for small quantities.

Candles harden with keeping and should be bought in large quantities.

Methods of Storing. Covered jars or tins are the usual receptacles for stores and should be clearly labelled.

It is important that new stores are not put into jars containing the remains of old stock. These should be removed, the jars washed and dried, the new stock put in with the remains of previous stock on top, or kept separately till used.

Any stock requiring replenishing should be jotted down on a slate or paper pad, as a reminder for ordering; and on arrival the bill should be checked and entered in the inventory book. The articles should be weighed before being put away.

The housewife will lessen labour if she gives out stores regularly at a given time each week, whether she has servants or does her own work. Much time and worry is also saved by having a definite shopping day, when everything that is required is ordered at once. This is especially important in country districts, where it is not always possible to get goods at the moment they are required.

Where the household is large, and the stores considerable, proper issue sheets should be kept, and filled up every time stores are given out. At the end of a given time, e.g. a week, month, or a quarter, according to the size of the household, the total issues of each stock should be entered in a special book, with the costs. This serves both as a check on outgoing stores, and as a reference for the amounts consumed, and for the running costs over a definite period. All storerooms or cupboards should be kept locked, and the key removed.

Care of Storeroom. Daily. Dusting with slightly damped duster to avoid raising dust, and mopping over the floor. Cupboards scarcely need daily attention.

Special Care. Stores should be removed from room or cupboard, which should be thoroughly cleaned. The jars should be wiped clean, and re-labelled if necessary. The stores should be put back when shelves are dry.

THE LARDER. The larder is a place for storing perishable articles of food, and should therefore be as cool as possible in order to retard the growth of moulds, and the undesirable changes brought about by yeasts and bacteria. A northerly aspect denotes absence of sunlight and will be cool, therefore a larder should be

built on the north side of the house, with a window facing in this direction. This should always be open, but covered with perforated zinc gauze to prevent flies and animals from gaining entrance. It should be large enough to give plenty of light to the larder, and the latter so arranged that in no part can stagnant air collect. If necessary the window and door must be supplemented by a ventilator. In some badly-planned houses the larder may have a western or southerly aspect, and much sunlight may make it very warm. When this is the case, a sunblind should be fixed outside the window, and it will probably be advisable to have a safe out of doors where the sun cannot reach it, so that the more perishable foods may be kept cool. Another plan is to put a second piece of perforated zinc a few inches from the first; this prevents entrance of hot air. Care should be taken that the walls are dry. Tiles are an ideal wall-covering, as they can be readily cleaned; where these cannot be afforded, glazed paper or imitation tile can be used, or even whitewash, which can be renewed frequently at small cost. A stone or tiled floor is cooler and more sanitary than a wooden one, likewise slate or stone shelves are preferable to those of wood; where the former are not obtainable, a slab of slate or marble can be placed on one of the wooden shelves, on which to stand milk and other things which perish quickly if not kept very cool. The top shelves should not be higher than can be conveniently reached. Sometimes it is only possible to get at them by chairs or step ladders, and these are most inconvenient, and add considerably to the labour of keeping the place clean. They could be taken down and put somewhere else where they would be of use, for instance, in the store cupboard. Shelves should be a good width, never less than 12 in. and more if possible. It is obvious that cracks between shelves and walls, and wall and floor harbour dust, and are impossible to keep clean; where possible, these should therefore be filled in in some way. Hooks fixed in the ceiling, which should also be whitewashed, are useful for hanging meat, game, or hams.

Useful accessories are a meat safe, wire meat covers, a vegetable rack or baskets in which vegetables may be put, a bread pan and muslin covers for milk and other liquids.

Storage of Food. Meat. Uncooked meat is best hung up, so that air can surround it freely; in the meat safe, which should be well ventilated, but impervious to flies, a hook is usually found in the roof for this purpose. Where there is no safe the meat should be hung on one of the hooks in the larder. To prevent contamination by flies it can be protected by a muslin bag so arranged by hoops of wire that the muslin does not touch the meat, and which contains a plate at the bottom to catch any escaping juices. (*See* Fig. 67*b*.)

Fish. Turn on to a plate or dish on arrival. Keep as cool as

possible, covered and away from other foods ; do not store longer than necessary.

Butter. This can be kept on slate or marble, and in very hot weather in a butter-cooler, which may be bought for a few shillings, or made at home in the following way — Invert a large flower-pot over a dish, preferably a deep one, containing the butter ; the flower-pot must be large enough to cover the dish easily. Place these in a larger dish containing water, and arrange a piece of flannel, or several thicknesses of muslin, over the flower-pot in such a way that it dips into the water all round. The material should be

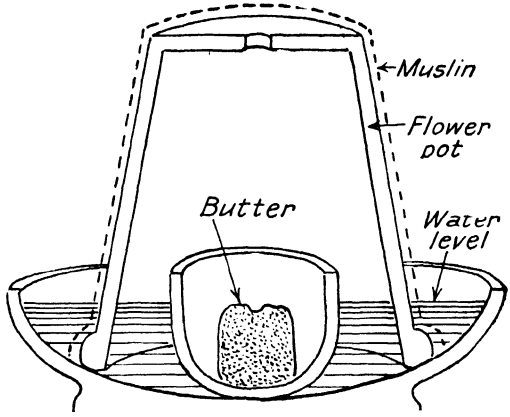


FIG. 65.—BUTTER COOLER IN SECTION.

evenly damped before arranging. The principle upon which a butter-cooler works depends on the two facts of capillary attraction, and the reduction of temperature when liquids evaporate. Water is continually evaporating from the material covering the flower-pot, which is therefore continually soaking up moisture. The evaporation taking place over the whole surface of the flannel causes reduction of temperature in the immediate neighbourhood, including the interior of the vessel, and it finally falls low enough for the butter to harden. The more rapid the evaporation, as in very hot weather, the quicker and lower the temperature falls. Care should be taken that the material is kept damp, and that the apparatus is in a current of air. (Fig. 65.)

Milk. This keeps best if placed in shallow vessels which are scalded daily, kept covered with muslin and stored in the coolest part of the larder.

Cheese. To prevent hardening, cheese should be kept wrapped in grease-proof paper, and placed in a cheese dish with a ventilated

cover, away from milk and butter, which readily absorb strong odours.

Bread. Bread is generally kept in an earthenware or enamelled bread pan, which has a ventilated lid. A cheap substitute for a small family is a large square biscuit tin, with holes made in the lid.

Vegetables. Only those for immediate use should be stored in the larder. They may be placed in a wood or wire vegetable rack which has partitions to isolate the different kinds of vegetables, and which admits of air circulating through; or they may be stored in baskets or wooden boxes. Onions should be kept well

FIG. 66.—VEGETABLE RACK.

away from milk and butter. Those on strings, or as taken from the garden with withered foliage, are better if hung up in bunches. All vegetables should be kept dry, or they are liable to rot or sprout if left. (Fig. 66.)

Fruit. Only stock small quantities in the larder, especially apples, which have a penetrating smell. They should be spread out on a dish or shelf to prevent crushing and bruising; and to prevent the spread of rot, each fruit ought to be separated from its neighbour if stored for any length of time.

Cooked Food. Any remains of cooked food left over from meals should be removed from the service dishes, and put on to clean plates or dishes and stored when cold either in the safe, or under wire or muslin covers.

Care of the Larder. Daily. The contents of the larder should be inspected daily before the meals for the day are planned. In this way all scraps will be used up and waste prevented. Stock needs to be boiled up daily, and any milk left over at the end of the day

should be scalded and put into a clean vessel. Milk at different stages of freshness should not be mixed, as the possible souring of one will affect the other.

The bread pan should be inspected and wiped out; crusts and stale pieces of bread should not be allowed to accumulate, but be utilized in some way.

The larder shelves should be wiped over with a damp cloth, and the floor mopped in order that no dust may be raised to settle on the food.

Weekly. The food should be taken out of the larder and placed

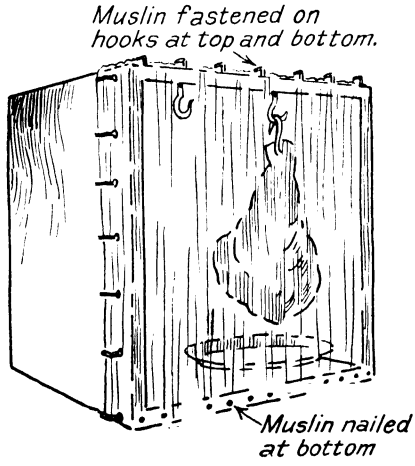


FIG. 67*a*.—HOME-MADE MEAT SAFE,
Made from a packing case.

on to fresh plates. All dust should be removed from walls, shelves, and floor, and any stone or wooden parts washed and scrubbed thoroughly. All accessories should be dealt with according to the material of which they are made. When the larder is dry the food is replaced.

Where there are only wooden shelves, sheets of clean white kitchen paper prevent grease and other materials penetrating the wood, and lessen the labour of scrubbing. The paper should be folded to fit the shelf, and be frequently renewed.

Larder Substitutes. Where no larder is planned in a house, a cupboard will have to take its place; this should be well ventilated in such a manner that flies cannot enter; a meat safe should also be used.

The Meat Safe. The meat safe may be either an accessory to the larder, or a larder in itself in small houses where none is provided.

It is usually made with a framework of wood or metal, with sides and door of perforated zinc. There is plenty of ventilation, but flies cannot get in ; the shelves are of wood, metal, or slate. Safes vary in price according to type and size.

Choose a cool place, where the sun does not penetrate, that is airy, easily accessible and away from drains of any kind. Fix

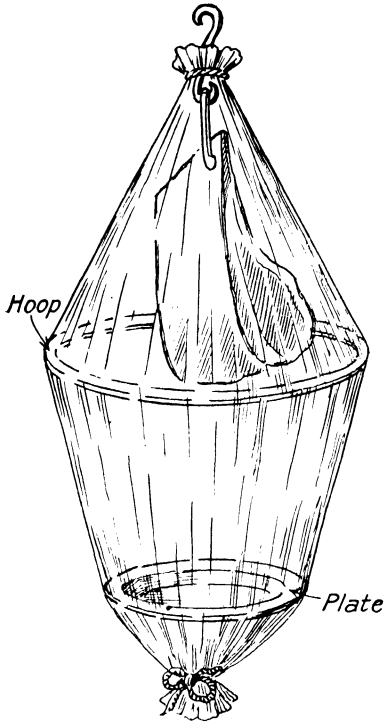


FIG. 67*b*.—HOME-MADE MEAT SAFE.
Made by tying a large piece of muslin to hook, fixing wooden hoop as shown, and tying the muslin ends after inserting the plate.

the safe not less than 5 ft. from the ground, which will lessen the amount of dust reaching it. If out of doors, it should be protected from wet by means of a piece of corrugated zinc, tilted to allow the water to run away ; and it should not be allowed to touch the wall at the back in case of damp.

A meat safe should be attended to and inspected in the same way as a larder. The perforated zinc can be lightly scrubbed, and well dried.

¶ *A substitute for a meat safe* can be made from a large sugar box.

Turn this on its side, and remove the bottom, replacing it with muslin. Make a door by stretching muslin over a wooden frame to fit the front; bore small holes in the remaining sides for ventilation. A shelf, if desired, can easily be fitted. (Figs. 67*a* and *b*.)

COAL CELLAR. The position of the coal cellar can do much to increase or lessen labour in the home. If under the house—literally a cellar—it involves much work in carrying coals upstairs, which are frequently inconvenient and dark. An underground coal cellar, however, is generally roomy, and large quantities can be stored, also there is little fear of theft.

If the storehouse is on the ground level, off a back passage, there will be less labour in getting it, but the immediate surroundings are apt to get dirty, especially the floor. This can be remedied by putting a piece of wood at the base of the cupboard inside the door, to prevent dust and small coal from escaping.

All coal stores should be on an outside wall, with a shoot through which fresh supplies can be delivered without having to be carried through the house, although this is still frequently the case in small houses where accommodation is limited. Outside store sheds are useful, and prevent the dirt coming indoors, though they should not be far from the back door. Such sheds should be watertight, and provided with an efficient lock; after coal has been fetched, they should be locked up. It is advisable to have large scuttles or other receptacles in the house which can be filled for the day, to prevent unnecessarily frequent visits being paid to the shed.

All coal sheds and cellars should be whitewashed at intervals, not only to help keep them clean, but to show up the coal more readily. A large shovel and a proper coal-hammer should be kept in the store; also some means of lighting.

Buying Coal. The housewife possessing a large cellar will find it economical to buy in a store of coal during the summer months sufficient to last over the winter. Coal is less expensive in the warmer weather, and generally cheaper to buy by the ton than in smaller quantities. It is more advantageous to purchase a good quality coal, which is smooth and bright in appearance and free from stones and slate; this will burn with a good flame and more heat, leaving less ash and clinker, than an inferior one.

Economy in Using Coal. Good coal merchants supply the coal in blocks which have to be broken up before they can be used. This should be done with a proper hammer, and one block should never be stood on top of another for breaking, as this causes too much coal to be broken into dust; if much dust is formed there is difficulty in using it up, and it is an unnecessary waste. Dust and small coal should be used as much as possible for the kitchen fire and for banking up fires when they are required to be kept in for some hours. Larger pieces are necessary in sitting-rooms. Coal

dust, if damped slightly, lasts much longer than if used dry, and it can also be used to form briquettes.

Where a cellar has to serve for storing other fuels, wooden partitions are useful in keeping them apart.

DISPOSAL OF HOUSEHOLD RUBBISH. The suitable disposal of kitchen refuse is most important from the point of view of both private and personal hygiene, and should therefore command the housewife's attention. Kitchen refuse may be divided into two classes, organic and inorganic.

Organic refuse comprises dead flowers, etc., and any food unfit for human consumption, such as vegetable peelings, scrapings of plates, tea leaves; these, if thrown indiscriminately into the dustbin, speedily decay, causing unpleasant smells, and attracting hosts of flies, who deposit their eggs therein, and after crawling all over it, depart, probably to enter houses and settle upon food, upon which they leave a great deal of dirt and millions of organisms of various kinds obtained from the dustbin and similar rubbish dumps. Hence, much illness and disease is traceable to flies, and an obvious remedy is to prevent as far as possible their access to such refuse as there is.

Any suitable remains of food should be given to animals, if there are any; a few fowls use up many scraps that would otherwise be wasted. If there are none, such remains should be burnt daily, either dried first, when they will burn rapidly, or put on damp, when they will help to bank up the fire. In flats where only gas fires are used and burning is impossible, the organic refuse should be dried and wrapped tightly in newspaper before being put in the dustbin. If an independent boiler is used for heating the water, this will prove extremely useful as an incinerator.

Dust, which is full of organisms, should also be burnt at once; or gathered up in newspaper before putting in the dustbin.

Inorganic refuse includes ashes from fires, soot, broken crockery, and glass, tins, etc., and these only should be put into the dustbin.

The Dustbin. Construction. This should be of galvanized iron, round in shape, with handles for lifting, and fitted with a watertight lid, made to shoot off any rain. The bottom should be rounded, and raised from the ground by a metal rim. It should be small enough to require emptying frequently; in towns this is generally done by the sanitary authorities, and may be daily or weekly. Where there is no regular collection, a pit should be dug at some distance from the house, the contents emptied regularly, and dug in.

The dustbin should be easily accessible from the house, and care should be taken to see that it is kept properly covered, to prevent flies and rain getting in; animals also should be prevented from access. It should not be allowed to get overfull, and nothing wet or damp should be put in, as moisture hastens decay, increases

bacterial decomposition, and gives rise to bad smells. No dustbin should ever be left longer than a week without emptying; the reason being that flies breed on an average about every ten days—that is, under favourable conditions, e.g. hot summer weather, eggs laid by one lot of flies will hatch and be ready to lay eggs in ten days' time; if, therefore, any possible larvae are among the refuse, these are destroyed, and prevented from breeding, by emptying the bins at least once a week. It cannot be too much emphasized that it is the duty of every householder, to both himself and his town or neighbourhood, to see that no chance is given for flies to breed on his premises. In towns, refuse is removed by the municipal authorities, and disposed of. In country districts, all refuse that cannot be burned can be buried deeply: tins and cinders make good foundations for paths.

The old-fashioned dustbin, built of wood to the side of the house, is an abomination not to be countenanced; neither should the brick or wooden ash pit, once widely prevalent, be used. Cleaning out is impossible; the place is open to visits from animals; and forms a most excellent hotbed of disease and breeding places for flies. For the life history of the fly *see* Chapter XXV (p. 262).

Care of Dustbin. After each time of emptying, the bin should be sprinkled with a dry disinfectant, such as carbolic powder. From time to time it should be scoured and dried thoroughly, afterwards being disinfected as above.

THE GARDEN. A garden is of great importance from the point of view of the housewife. Even a small garden will yield a part, at any rate, of the vegetables needed by the family, and fresh vegetables are much more delicious than those bought from a shop. A good gardener is careful to plant in such a way that there is a constant succession of vegetables, and if enough can be grown to store for winter use, this is most desirable. The housewife will be glad, also, to keep a border or bed for growing herbs, such as mint, parsley, thyme, etc., needed in cooking, thus not only saving money otherwise spent in buying them, but having fresh material for use when required. A small salad garden also is well worth while, and very easy to manage. If fruit trees are established, the fruit can be utilized for jams or pies. A small flower garden will often supply something for house decoration, and many people find great delight and recreation in doing their own gardening.

Where there is no garden, or even a backyard with a border, all vegetables, fruits, and flowers must be bought, but even then herbs and salads may be grown most successfully in a window box. They will require attention and fresh soil from time to time, but it is well worth while to keep such a box for the sake of having fresh and varied herbs for use. The ones most commonly required are mint, thyme, and lemon thyme, parsley, and sage, and these may be put in as seeds or obtained as young plants from a nursery.

With the requisite attention, they will be found to thrive and to be of great use. A few flower-pots of herbs can take the place of the box; they will require re-potting occasionally.

DRYING OF HERBS AND VEGETABLES. Herbs. Some herbs are much more prolific than others in the same neighbourhood, and many produce considerably more than can be utilized. It is a good plan to gather them when at the best stage, and dry for winter use. They can be cut in sprays and tied together in bunches. To be successful, they require to be dried fairly quickly, preferably in the sun, but failing that, hanging in a warm dry place, upside down, is effective. When quite dry and brittle, the leaves are stripped from the twigs and powdered by crushing, after which they can be kept in airtight bottles.

Root, Tuber and Bulb Vegetables, if plentiful, may be stored for winter use, in a cool, dark, dry and well-ventilated place; onions keep best if hung up. Tomatoes, asparagus, and beans can be successfully bottled at home, but peas are extremely difficult to deal with satisfactorily in this way, as they ferment very rapidly.

To the housewife the possession of a fruit and vegetable garden offers great possibilities in the making of jams and pickles, chutneys, and bottled fruits; also a supply of fresh vegetables and fruit facilitate variety in diet.

Fruit may be dried for winter use, especially apples; these, if of a keeping kind, may also be kept for months if they are spread out on straw and not allowed to touch one another.

STORAGE SPACE. Small houses and flats, and converted houses, may have very limited storage space, especially in the kitchen. A refrigerator, run by gas, electricity, or paraffin, can be used for the perishable foods. Keep butter, milk, etc., at the top, and meat, game, etc., at the bottom. Salads should be covered to prevent wilting. Keep the temperature as recommended by the makers, and do not allow the door to remain open longer than is strictly necessary. Once a week, they must be turned off, defrosted and cleaned out. Wipe out the whole interior with cool or cold, *not* hot, water, and dry with a clean cloth, washing any glassware in *cold* water, as hot will cause it to crack. Replace food, and set to the desired temperature, to cool down again.

Storage of non-perishable food is limited, but it is only prudent to attempt to keep one shelf or cupboard for a small supply of household and tinned goods, and the necessary herbs and flavourings that help the cook.

CHAPTER XXIII

LINEN ROOM

THE linen room should be well fitted with shelves and drawers, and contain a chair, table, sewing machine, linen baskets, and a book for keeping an inventory of the contents. Where a room cannot be spared for this purpose, a cupboard fitted with shelves should take its place. The room or cupboard must be dry and well ventilated, and the latter must on no account be placed in the bathroom, as the steam will make the linen damp. It is very often arranged for the hot water circulator to warm the linen room; but where no special means is available, a dry place, or an inner wall, should be chosen. Pure linen articles tend to become discoloured and brittle if kept warm, therefore these should be kept in a cool, dark, airy but dry place.

SHELVES. Shelves are preferable to drawers for storing linen, as the opening and shutting of deep full drawers is a weighty task. Small light articles, however, may quite well be kept in drawers. The shelves should be strong, of smooth white wood, sufficiently wide to take sheets and table-cloths easily. The distance between shelves should be 24–30 in., to allow of the linen being piled up. They should allow free circulation of air round linen, and for this reason are frequently slatted; but this is not very satisfactory, as the first few layers of linen effectually prevent the air penetrating. It is better to arrange for air to circulate behind each shelf; that is, shelves should not touch the wall at the back, but leave a free space of an inch or more. Cupboards should also be well ventilated.

The linen on the shelves should be covered to prevent dust settling; muslin permits of air entering, though the usual glazed holland may be more effectual in keeping out the dust. A good way of arranging the covering cloth on each shelf is to fix hooks into the underpart of the shelf above, as far back as possible. Small rings are sewn on to the cloth or muslin and hung over the hooks, allowing the muslin to hang as a curtain between the shelves. It should then be arranged to lie flat on the lower shelf, the linen put in position, and the rest of the muslin brought up over the linen. The muslin should be wide enough to cover a full shelf easily, and should be arranged in this way for every shelf. (Fig. 68.)

ARRANGEMENT. There should be separate shelves, or definite parts of shelves, for each kind of linen, e.g. bed, table, towels, etc., and for worn-out articles waiting their turn to be cut down for other purposes. Each kind of article on the shelf should be in a separate

pile. It is a good plan to label each shelf according to its kind, e.g. bed-linen, and indicate the piles of pillow-cases, sheets, etc., so that things are replaced quickly without error in their correct places.

Curtains should be placed where they will not crush, and small light articles, such as tray-cloths, d'oyleys, etc., are best placed lightly in a drawer or box. Table-cloths are rolled, and then tied to keep them together. Blankets not in use can be placed out of the way at the top of the cupboard or in a box or deep drawer;

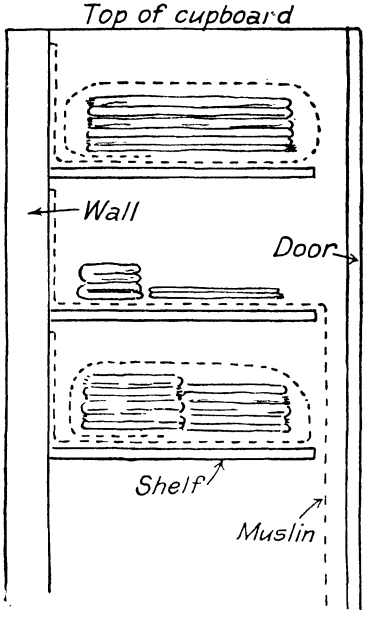


FIG. 68.—DIAGRAM SHOWING A METHOD OF COVERING LINEN.

they must be clean and dry, and well-sprinkled with camphor balls or other moth preventive, and may be wrapped up in newspaper, which moths dislike.

LIST AND INVENTORY BOOK. Pinned to the inner side of the cupboard, or in some conspicuous place in the room, should be a list of the contents on each shelf, by which to check the linen from time to time. In addition, there should be an inventory book, kept carefully by the housewife, as it will be useful for her to refer to at a later period. In it should be stated the number and kind of articles purchased, the date when bought, and the price of the goods: a space should be left for any remarks, and for the number put in reserve. It is also useful to record the date when articles

are taken from reserve into common stock, as this gives an idea of how they have worn. To facilitate reference, each kind of article should have a page to itself, e.g. sheets, towels, pillow and bolster cases, table-cloths, and so on.

MANAGEMENT. As linen returns from the laundry it should be checked, counted and inspected, repaired if necessary, and thoroughly aired before it is placed at the bottom of each pile ; this ensures equal wear on all the articles.

No linen should be given out for use in a frayed or torn condition ; table-linen should be mended before washing, and the rest before putting away ; but any rents or holes should be drawn roughly together before washing to prevent further tearing. All mending should be carefully and neatly done.

All linen should be marked. As far as appearance goes cross-stitch worked in red ingrain cotton, or the name embroidered in linen thread, is to be preferred ; but for safety, marking ink should be used. This varies in quality and in the method of application ; a reliable make should be bought and the directions carefully followed. Especial pens are generally supplied ; but if not, a quill pen should be used, as the material of the ink nearly always attacks the metal nib, forming compounds which may rot the material where it is marked. A marking frame, which may be bought cheaply, is most useful for keeping the material taut during marking. New linen should have the dressing removed before marking, as this prevents the ink from penetrating properly.

Woven name-tapes may also be used ; these are made in various widths and styles for all purposes, and are quickly and neatly sewn on.

All markings, except of embroidery, should be done on the wrong side, on a double part, where it will not be seen when in use. The left-hand top corner of the hem is the one usually chosen, the method shown being one of many ways of marking clearly—

G. Hart
3
6 1946.

This signifies that G. Hart purchased in 1946 half-a-dozen of these articles, and that this particular one is the third in the set.

CHOICE OF LINEN. The best that can be afforded should be bought ; poor quality, and cotton articles bought in place of linen ones, are never satisfactory.

Table-Linen. This is made of figured linen material known as damask. The name was originally given to rich silk cloth with a raised pattern made at Damascus, but is now applied to linen material woven in such a way that some parts appear darker or lighter than others, forming a pattern. The patterns range from simple to elaborate designs, and the cloth is either single or double damask, according to thickness. Double damask is

more expensive, and wears much better than single. Damask may be obtained bleached and unbleached; the latter is exceedingly strong and hardwearing, and is considerably cheaper than the bleached; it is most suitable for kitchen and nursery use. In time, with regular, careful washing, and exposure to sun and air when damp, it will become quite white.

Bleached damask is more suitable for ordinary use; the better the quality, the thicker the damask and the more beautiful the design. The housewife should be careful to see that she buys real linen and not cotton finished to resemble linen. A written guarantee of purity guards her against fraud, and she will do well to deal with a reliable firm. A test by which linen may be distinguished readily from cotton is to apply a drop of oil to a sample of each. Linen will appear transparent, cotton will not. Or if a drop of water is placed on separate samples, it will at once penetrate to the other side of the linen, but less rapidly on cotton of equal thickness. All linen should be woven with a close, even weave; the finer the quality, the finer and more even the weave. Whenever possible, linen bleached by natural methods should be purchased in preference to chemically-bleached linen, as the latter process injures the fibres to a certain extent, making the linen less durable.

At the present time table-mats used on a polished table are more fashionable than a large cloth. These may be had in many designs in embroidered linen, or perfectly plain with buttonholed edges. Mats of single material, placed over a pad of asbestos or other non-conducting material, present a better appearance than the double ones in which the asbestos is to be encased. With the plate-mats are sold small ones for glasses and small plates, and a centre-piece to match. These mats save much work in "getting up" big table-cloths, but they only look their best on a well-polished table which is kept in very good condition.

The same points as regards choice apply to table-napkins: in fact, they may be bought to match the table-cloth in pattern if desired. They should be square. These vary from 22–31 in., 27 in. being a useful size.

Other house-linen, such as afternoon tea-cloths, tray- and service-wagon-cloths, sideboard-cloths, and duchesse sets, should be of good quality linen, as it wears longer and looks better.

Bed-Linen. Sheets. These may be of linen, or cotton, or a mixture called "union," of cotton and linen. The linen ones are the whitest and most durable, but conduct the heat away from the body rapidly, which causes some people to object to the cold feeling. The finest linen sheeting is expensive, but it looks very well, and wears excellently. Unbleached linen is slightly coarser and cheaper, and washes white in successive launderings, especially if exposed to the sun and wind, or laid on grass. It wears for years, and is economical to buy. All linen washes with greater ease than

cotton, and looks fresher when finished. Poor linen, however, should be avoided, and a good quality union (or cotton) used instead. This is very good wearing material, and considerably cheaper than pure linen; but inferior qualities will neither wear nor wash satisfactorily.

Cotton sheets may be plain or twilled. They are warmer to the touch than linen, and much cheaper, but are rather more difficult to wash and to keep a good colour. Twill sheets wear very well, and are slightly more expensive to buy than plain cotton ones.

All sheets should be sufficiently large to allow for turning down and tucking in. For a bed 3½ ft. wide, sheets should be 2 yds. in width; and for double beds, which are usually about 4 ft., they should be at least 2½ yds. wide. All beds are about 6 ft. long, and the sheets should be quite 3 yds. in length. The top hems should be wider than the bottom ones, to prevent the sheet being accidentally turned round during the bed-making.

Bolster- and Pillow-Cases. These may also be of cotton or linen, the latter being the coolest and most comfortable. They may be fastened with tapes or buttons; bolsters may be left with long open ends, embroidered or bordered with lace. The latter style is easier to wash and launder than those with tapes or buttons. Both pillow- and bolster-cases should fit easily: if too small the pillow or bolster is made uncomfortably hard, and if too large, the slip wrinkles.

Counterpanes. A light silk or linen counterpane is preferable to the old-fashioned heavy quilt, which is difficult to handle, is exhausting, and not warm in use. The counterpane may be white, embroidered, or trimmed in some way, or in a colour to harmonize with the rest of the room. In some cases coarse-meshed white net, laid over a coloured linen, and trimmed with ribbon run through it, looks attractive. A plain linen sheet, white or unbleached, with a good quality linen lace and insertion, looks very clean and cool.

Kitchen-Cloths. Glass-cloths, tea-towels, kitchen- and paint-cloths are all preferable if made of linen; they last better, and give a better polish to glass, china, and paint, leaving no lint or fluff as cotton ones do. All cloths should be clearly marked for the purpose for which they are intended, and should differ from each other, if possible, by stripes or checks, to aid identification.

BUYING STOCK. If means permit, when starting a home, a wise housewife will lay in a goodly store of linen. Some of this can be taken into daily use, and some kept in reserve, and some used only on special occasions or for guests. When that in daily use shows signs of wear, it would be well to buy yearly some addition to the stock, thus avoiding a large outlay when things are quite worn out. At first it will be necessary to buy a good many service cloths, but when once started, the larger articles, when too old for use, may be cut down for these.

The quantity of household linen necessarily varies with circumstances, and no hard and fast rule can be laid down. The following list is an average amount for a family of two who are about to set up house, and who will keep one maid, and have a spare room containing two single beds, making three single and one double bed in the house—

	Quantity.	In General Use.	In Reserve.
Sheets	5 prs. for double bed	3 prs.	2 prs.
	3 „ „ maid's bed	3 „	—
	5 „ „ visitors' beds	4 „	1 „
Pillow-cases	18	12	6
Bolster-cases	3 large	2	1
	5 small	4	1
Towels (bedroom)	18 bedroom	12	6
	12 bath	8	4
Mattress covers	2 large	2	—
	4 small	3	1
Bedspreads	2 double bed	1	1
	1 for maid's bed	1	—
	2 for guests' beds	2	—
Blankets	6 small under-blankets	5	1
	2 large „	2	—
	4 large top blankets	2	2
	10 small „	9	1
Duchesse sets	8	6	2
Curtains	2 prs. for each window.		
Table-cloths	4 table-cloths or 3 sets table mats	3	1
Table-napkins	2 doz.	12	12
Carving-cloths	4	3	1
Sideboard-cloths	4	3	1
Service-wagon-cloths	4	3	1
Afternoon tea-cloths	4	3	1
Tray-cloths	6	3	3
Kitchen table-cloths	3	3	—
Breakfast table-cloths	3	3	—
Lavatory cloths	6	4	2
Chamber-cloths	6	3	3
Bedroom-ware-cloths	6	3	3
Dusters	24	8	16
Dustsheets	6	6	—
Roller towels	6	4	2
Glass-cloths	6	3	3
Tea-cloths	12	6	6
Kitchen-cloths	12	6	6
Paint-cloths	4	2	2
Dish-cloths	12	3	9
Oven-cloths	3	2	1
Floor-cloths	12	3	9
Hearth-cloths	3	2	1
Bundles of rags for application cloths.			

Bedroom Towels. These may be of cotton or linen; linen huckaback or diaper-patterned towels are infinitely preferable, as they are more absorbent and wear better than cotton. Hemmed ends are more durable than a fringe.

Bath Towels. These are also of cotton or linen. The latter is stronger and more durable than the cotton Turkish towelling, which is, however, considerably softer. They may be obtained in various sizes and thicknesses. It is advisable to buy thick towels of a good size as they are more satisfactory in use, though more expensive. The very large ones, known as bath sheets, are very expensive, and heavy to wash.

OLD LINEN AND ITS USES. Household linen, being an expensive item, should be kept sound as long as possible, and when too worn to serve its original purpose, and mending is no longer possible, it may be cut down for smaller articles.

Sheets, when showing signs of wear in the centre may be cut in half, the worn part cut away, and the raw edge hemmed. The outer sides are brought to the middle, and neatly and smoothly joined by sewing, thus making a smaller but quite sound sheet. Thin places and holes should be darned or patched carefully. When too old for wear, sheets may be used for dustsheets or ironing sheets; and if cut smaller, for glass-cloths, paint-cloths, ware-cloths, etc.

Blankets, when worn thin, are useful for underblankets, and ironing blankets, or may be cut down for floor flannels, and polishing pads and rubbers.

Bedspreads, when old, are useful for dustsheets, and cut up into dusters.

Pillow-cases, when worn, are useful for putting on over the ticking of the pillows; or may be used as copper bags; or for holding articles to be stored, especially furs.

Bedroom Towels are useful for cutting up into lavatory, chamber, or ware-cloths; roller towels make good paint-cloths.

Table-cloths, when worn at the edges, may have an inch or so cut off all round, and be hemmed. This also alters the fold. When too old for use they may be cut down for carving cloths, sideboard, tray, or service-wagon cloths, or made into table-napkins, or centres for cake d'oyleys. Odd pieces of household linen are useful for application cloths, and finer sorts should be kept for bandages, etc.

SOILED LINEN. In every bedroom a covered basket should be provided for keeping soiled linen, and for soiled household linen a basket should be kept in the housemaid's closet, or in the bathroom, if these are large enough, or in some convenient place other than a bedroom or landing, until such time as it can be sorted for the weekly wash.

If linen is sent away to be washed, it is important that

everything should be clearly marked. A basket is usually provided by the laundry in which to send the linen, and this may be lined with one of the sheets sent; articles should be folded neatly and those of a smaller nature should be placed together, heavier ones, such as sheets, being put at the bottom. Put the articles into the basket so that those written first on the list will come on the top when the basket is unpacked, and thus be easily checked. Cover over with remainder of lining sheet and fasten securely.

It is as well, when sending out laundry, to make a duplicate list of articles sent, keeping one, and to check it on return by both lists.

CHAPTER XXIV

CLOTHING

CULTIVATION of good taste in dress is very desirable: clothes may not make the man or woman, but they are a wonderful tonic to self-esteem.

POINTS ON GOOD DRESSING. The first point for consideration is the amount of money available. This should be a settled portion of the yearly income, the amount, of course, varying with individual requirements.

When apportioning the amount to be set aside for clothes, an average of two or three years can be taken, as certain large items, such as big coats and costumes, are not usually bought every year.

The prices of different articles of clothing should be in proportion one to the other; if too large a sum is spent on one thing, other items will suffer in consequence, and the result will be badly balanced.

The extent to which a knowledge of dressmaking, millinery, and plain needlework is possessed by the housewife will affect the outlay. If underclothing, dresses, jumpers, etc., are made, and hats trimmed, at home, expenses are considerably reduced. Especially can the home worker save by making children's garments at home, and by turning partly-worn adult garments into smaller ones for children.

Then, too, must be considered whether outer garments, such as coats and costumes, are to be bought ready-made or tailor-made. If the wearer is "stock size," economy may be effected by purchasing the former; but, if money allows, the latter is infinitely preferable, as better fit and workmanship is ensured; the wear is longer and more satisfactory, and the wearer always looks well dressed.

Knowledge of clothing materials is essential to satisfactory buying. Every housewife should have a clear idea of the physical properties and microscopic appearance of the textile fibres—wool, silk, cotton, and linen, and should be able to apply simple tests for good quality fabrics. She should also be able to differentiate between good cloth and bad, by feel, weave, and weight, and refuse "shoddy." Some knowledge of the wearing and washing qualities of different materials is desirable. Much of this knowledge can only be obtained by experience, and a housewife will gradually learn a great deal by handling and examining materials in shops, especially the best qualities, even if, at the moment, she cannot afford to buy them. She will by degrees form a high standard

of quality which is invaluable in good dressing. Whenever possible, the best qualities should be purchased, as the wear is far more satisfactory.

Time is saved by arranging to buy clothes at a definite time, say, at the beginning of the two chief seasons, and not spasmodically. This enables the wearer to get at the same time things that match.

Great care should be paid to colour, style, and line in selecting clothes. Every housewife should make a point of studying herself and those for whom she has to buy, so that she and they may be clothed in a becoming manner. When certain styles are found most becoming to the wearer, these should be adhered to more or less ; or at any rate, not quickly changed for others not as becoming. *Line* is, perhaps, the most important point ; awkward figures can be made to look graceful, and stout ones more slender, by careful attention to this. It should, also, always be borne in mind that a narrow stripe skilfully managed lends height to a short figure ; horizontal stripes tend to reduce height, and emphasize width. *Colour* is also important in dressing, and the suitability of various colours should be studied, and the results followed.

Fashion should be followed only in so far as it enhances the wearer's appearance. The best-dressed woman is she who makes fashion conform to her own requirements, and refuses to wear "fashionable" colours and styles that are not becoming to her. Slaves to fashion spend much money, and are seldom really well-dressed, since many people are entirely unsuited to the clothes they are wearing.

Great care should be paid to the selection of suitable clothing on hygienic grounds. Sufficient warmth, without weight, should be aimed at, especially for underclothes.

CARE OF CLOTHES. If clothes are to preserve their freshness and wear as long as possible, attention must be paid to their care after use, and storage between seasons.

Underclothing. All garments should be marked when new ; if marking ink is used, this should be done on the wrong side on double material, which should have been previously washed.

Regular and frequent changing is not only more hygienic but more economical, as there is less strain on the material in washing.

Thorough airing before putting away after washing prevents the material from becoming mildewed, and saves the wearer from subsequent chill.

Mending lengthens the life of the garment, and clothes should be carefully examined as they return from the laundry, and repaired at the first sign of wear.

It is more economical to have several sets of underwear, say, half a dozen of each kind, which should be worn regularly in turn. As each garment is only worn at much less frequent intervals, its life is considerably lengthened, and there is less labour in mending and

making. It is quite a good plan to have some article in making even when not immediately required, so that a small reserve stock accumulates and may be drawn upon when necessary.

For woollen underwear natural coloured wools are more durable than the very white, which are weakened by bleaching. For persons with skins too sensitive to wear wool, mixtures of silk and wool are good, but expensive. Cotton underclothing, if made of softly-woven material, or in cellular form, is absorbent and smooth, and, though less desirable than wool, it may be worn next the skin. In connection with woollen garments it should be remembered that thick, closely-woven, heavy wool material, or woollen goods that have become "felted," are much less warm than light, porous weaves, since the warmth of wool is entirely due to its capacity for holding air in its meshes, and the more open the mesh the more air can be held. Stockings should be of fast dye, they should be changed frequently and removed as soon as signs of wear appear, washed and mended.

Coats and Skirts. These should be brushed well after use; if damp or wet, shake well, and allow to dry before brushing; mud stains should be removed as soon as possible after drying. Hang the coat on a coat hanger, and the skirt by loops on a hanger or pegs; it should never be put on a hanger if it has no loops. Dust can easily be removed from coats and skirts and clothes of woollen or other thick material by going over them with the vacuum cleaner occasionally.

Hats. If wet, shake well, but do not attempt to brush, or dry with a cloth; set in correct shape, and allow to dry. Brush gently to remove any dust, and place carefully on shelf or in box with paper in crown and bows. Hats last fresh much longer if carefully brushed and all dust removed. Velour and similar material should be brushed the way of the nap.

Furs. If wet, dry in a current of air after shaking well. Fire heat makes the fur and leather brittle. Pass a soft cloth over the surface periodically to remove greasy dust. Fold with fur side out, and store in dry box, or a bag, containing moth preventive.

Feathers. Shaking in front of the fire improves these.

Veils. Stretch and shape lightly after wear, and keep rolled. If creased they may be gently pressed with a warm iron on the wrong side diagonally across the mesh.

Gloves. These should be peeled off the hand, as pulling by the finger-tips tends to misshape them. They should be folded, rather than rolled up; the fingers should be pulled straight and the thumb folded over, then placed together and folded in half. Wet leather gloves must never be put near any heat to dry, or they shrink and harden.

Umbrellas. When wet, dry handle down, in closed condition; if dried open, they stretch and do not close neatly when rolled.

Heavy Dresses keep their shape better if hung on coat hangers, and kept in cotton bags. Those of muslin, voile, and other *thin materials*, crush less if folded carefully with paper in the folds, and put lightly in a drawer. Their appearance is improved by pressing before use.

Shoes and Boots. These should be put on trees immediately after use, or stuffed with paper. If wet, they should be dried slowly on their sides, to allow the soles to dry properly. They should never be put too near a fire or other source of heat to dry, or they will shrink, harden, and crack. They should be stored neatly in a dry, airy place, and several pairs should be worn in turn, as they wear better if given a rest. New shoes improve by being kept some time before wearing. It is always economical to buy good well-fitting shoes. Cheap makes do not give the wear or comfort of better-priced qualities, and have to be renewed very soon, as they cannot stand repairing. All mud should be removed by a damp cloth, or blunt instrument, never by a knife, and the shoes well cleaned with good polish. This preserves both the leather and the surface finish, and lengthens life of footwear. As soon as signs of wear appear on soles or heels the shoes should be repaired; if left long before this is done, the appearance is bad and the shoe misshapen. The use of rubber soles, which can be put on when shoes are new, saves wearing out the original soles; and the cost of repair is considerably less than for leather.

Care of Masculine Attire. Suits should be brushed daily after use, and the coat hung on a coat hanger; the waistcoat folded by the two side seams, making a screen fold of four. Trousers must be carefully folded, each leg seam to seam, making a straight crease down the back and front of each leg; they should then be put in a trouser-press. If a suit is not to be worn continuously, it should be folded carefully and put in a drawer. Two suits worn alternately last longer and keep their shape better than one worn every day.

HINTS ON THE STORAGE OF CLOTHES. All cotton and linen articles of any description should be clean and well-aired, but unstarched for storing; and if for a very long time, it is said to be better not to iron them. Starch left in material may cause it to become "tender," and favours the growth of mould (mildew).

Woollen Articles should be clean and well-aired, and wrapped in newspaper with moth preventive. Moths will not lay their eggs in things wrapped in it, but no spaces should be left by which they might get in. Furs can also be well wrapped in newspaper, and packed into moth-proof bags or tins with plenty of camphor. They should be inspected occasionally. Very valuable furs should be sent to a reliable firm to be placed in cold storage.

Outer Garments. These should also be free from dust, and have all stains removed; if possible they should be washed or cleaned.

Woollen materials are stored like woollen articles, with tissue paper in sleeves and between folds to prevent too much crushing.

Folding is important; no unnecessary creases should be made.

Coats are folded in various ways, one of the simplest being to pick up the coat by the top and bottom of one side seam and place it against the other, making a screen fold of four. Lay the coat on its side, arrange the shoulder and sleeve, after padding with paper, neatly and in shape along the coat. Turn over carefully; arrange the other shoulder and sleeve, and fold in half, with paper between. There are other methods, but any that result in as few creases as possible may be used.

Skirts. Fasten at waist, lay front downwards on a table, fold back sides to meet in centre line, with paper in the creases, keeping the skirt as straight as possible from waist to hem; fold in two, with more paper between.

Blouses and Dresses. Light dresses and blouses should be folded lightly with plenty of paper, and kept in cardboard boxes, a few together; this is better than putting many garments on top of each other, as they are less likely to be crushed.

PACKING. So few people seem to know how best to pack a trunk or case for travelling that a few hints should be useful. The whole secret of successful packing, to avoid undue crushing, is to pack articles as smoothly and tightly as possible; this sounds contradictory, but really the close packing prevents the contents shifting when the trunk is stood on end, which is the chief cause of crushing.

A trunk or suitcase or any box for travelling should be packed in the following way—

Brush out trunk, and line bottom with white paper. See that it is perfectly dry.

Put in all heavy articles, such as boots and shoes, books, small boxes, music, in an even layer at the bottom; avoid arranging it so that all the weight is in one place. Boots and shoes should be wrapped individually in paper, or boot bags, and should be quite clean.

Any spaces now left should be stuffed with stockings or other small soft articles, then underclothing, folded very smoothly, should be put in. Better packing is obtained by laying articles in full or half lengths, and each article should be put in separately and evenly, making a flat and level surface, avoiding lumps, and fitting well up to corners and sides of trunk.

Coats and skirts and heavy dresses should follow. These should be laid in very smoothly, and at full or half length; any hollows or corners may be filled with odds and ends. Breakable articles should be wrapped in paper and placed in the middle of the trunk, preferably between woollen goods.

Dresses, blouses, handkerchiefs, and any light articles may be placed in the tray, which should be covered with a cloth when

full before closing down the lid. If hats have to be packed in a trunk, they should be placed on the tray and pinned to it with the crown stuffed, and the brim flat ; soft articles should then be packed carefully round the crown to prevent slipping. It is better, however, to carry them in a hat-box.

A trunk should be quite full before closing ; if not full and tightly packed, everything will slip to one end. All housewives should take trouble to learn how to pack properly and teach others.

Finish off by locking, and strapping if necessary, and label clearly.

Trunks ought not to be left any longer than necessary before unpacking.

HOMELY METHODS OF CLEANING CLOTHES. The following methods of cleaning and renovating articles of clothing which cannot be washed by ordinary methods have all been tested and been proved satisfactory and efficient ; much money can be saved by giving this attention to such articles at home, instead of sending them to the professional cleaners.

Serge, Tweed or Cloth Garments. Dark Coloured Garments—

To Freshen. Prepare 1 pint warm water and to it add 1 tablespoonful of vinegar, *or* 2 teaspoonfuls of ammonia.

Remove all dust from garment, and procure if possible a piece of the same material.

Make this into a pad, dip into the liquid and rub evenly over the garment, especially along the seams.

Rub as dry as possible with a dry piece of similar material.

Press on the wrong side with a cloth over the material, so that the iron does not touch the garment.

To Wash. Glue-Washing Method. Brush the garment thoroughly, removing all grease marks with petrol or benzine, as these are not taken out in subsequent processes.

Take 2 oz. sheet glue (which is sufficient for one adult's garment, such as a skirt or coat), break it up, and place it overnight in a jam jar with 1 pint of water. Next day, stand this in a saucepan containing water and heat until the glue is dissolved.

Pour the dissolved glue into a bath containing sufficient water, as hot as the hand can bear, to cover the garment comfortably, and stir well.

Soak the garment in this for half an hour ; every few minutes, knead and press the garment under the solution.

Rinse well in successive lots of water of the same temperature, until the water remains clear.

Press out the water by squeezing gently, and hang to dry in a good current of air in the shade. The waist of a skirt should be pinned on to a cloth.

When nearly dry place a cloth on wrong side of material and press with a moderately hot iron.

White and Light-coloured Garments. These may be cleaned with a cloth-ball of similar colour to the material, or if white, powdered magnesia may be used instead. After removal of dust, rub the cleaning agent well in, and leave for some hours rolled up in a clean cloth. Shake and brush well, out of doors if possible.

To Remove Grease Marks. The following method is particularly effectual in removing grease from coat collars, the satin lining of furs which touches the neck, and the under-brim of hats which come in contact with the hair; also kid gloves, white or coloured—

All loose dust should be removed by shaking or brushing.

Place on the table an old but clean cloth or clean absorbent blotting paper, and, if possible with a pad of material similar to that of which the garment is made, or a soft cloth, apply benzine or petrol sparingly and evenly over the greasy parts, working from outside towards centre of soiled part. Whenever possible, this should be done from the wrong side to wash out the grease, and prevent it passing through the material. The paper or cloth should be examined after a short time; when soiled, it should be moved to a clean part, and the sponging continued until no more dirt appears to come out.

Dry in a current of air.

N.B.—Petrol is very inflammable and should not be used near any flame or source of heat whatever, and should be applied if possible out of doors or in a good current of air. Large articles cleaned with petrol should never be hung in a room to dry, but always out of doors, as there is a danger of fire caused by an accidental ignition of the fumes by a lighted match, or even, as has happened, by a lighted cigarette.

To Remove the Shiny Appearance from Rough or Fluffy Material. Rub lightly with a piece of old fine emery paper, or brush with a soft wire suede brush.

For Smooth Material, washing in glue water and subsequently pressing generally removes this; sponging with ammonia and water is sometimes effective.

Pressing of Garments. Pressing of garments after brushing well will considerably freshen them. If of woollen material this is usually done on the wrong side over a damp cloth, and finished with a dry one; cotton materials are usually pressed on the right side with a moderately hot iron. The pressing should be done on single material to prevent seams marking through; thus, a sleeve- and skirt-board are very useful articles to possess for this purpose. A rounded surface, such as a covered rolling-pin or clean broom-handle, placed under a seam when pressing will prevent the mark of the edges showing on the right side.

STAINS. For the general principles of removal of stains see Chapter IX, page 138; to remove stains other than those mentioned under Carpets (Chapter XIII, page 162) see any good laundry book.

TO CLEAN FURS. Although wiping with a soft cloth or silk

handkerchief after use helps to keep furs clean and smooth during the winter months, they tend to become greasy and dusty. They can, however, be very satisfactorily cleaned with bran in the following way — Remove all loose dust by beating lightly and shaking, and attend to lining if greasy. For one medium-sized fur, 3 or 4 handfuls of bran will be sufficient; place it in a tin, and heat thoroughly in the oven. Place the fur on a paper, and thoroughly rub in the warmed bran, re-heating this as it cools. When all the fur has been cleaned in this way, shake and brush it in the open air, beating lightly on the wrong side to remove all traces of bran; if long fur, it may be combed gently. The bran used should be quite fresh, and it is advisable to bake it thoroughly before using. Fig-dust may be used instead of bran.

White Furs may be cleaned in the same way as above, but hot flour, or hot flour and salt, or magnesia are the cleaning agents used.

Another method is to sprinkle the fur with magnesia, fold up, and place in a pillow case; leave three or four days, shake well, and beat lightly.

Rubbing the fur lightly with petrol or benzine removes grease, and brightens the fur.

TO CLEAN HATS. Hats are cleaned according to the material of which they are made, but they should first have the trimming and head-lining removed; the latter should be washed and ironed before being replaced. Ribbon trimming can often be freshened by ironing under a damp cloth. Velvet is best renovated by passing it in front of steam from a kettle, and then the wrong side over the face of a warm iron to raise the pile. Flowers may be freshened similarly by steam and should be placed in shape as they soften, and allowed to dry and stiffen.

Felt Hats: White. Brush well to remove all dust, and block crown with paper. Any grease may be removed with petrol or benzine first.

Clean with two parts hot flour and one part salt; or with magnesia or a cloth-ball.

Apply with flannel, rub well in, beginning at the centre of the crown and then brush thoroughly.

Coloured. Prepare as described above and clean with bread-crumbs and methylated spirit mixed to form a dough; rub well in until dough remains clean when applied; dry bread-crumbs or warm bran can also be used.

Velour Hats: White. Clean as for white felt.

Coloured: Warm bran or salt may be used. A soft wire-brush improves the appearance of the velour, but holding over a kettle or saucepan of boiling water does this better than brushing. Damp muslin placed on the velour and pressed with an iron raises the pile when peeled off.

Straw Hats. These often require attention after subjection to strong sunlight or much rain. The less stiff varieties must be put into required shape after application of anything which tends to damp them.

White Straw. Scrub with warm soapy water, using a soft nail brush; rinse, and dry well in a current of air. If a soft straw, place in a good shape before drying. Do not make the hat too wet.

If the straw has turned brown with the sun, mix 1 oz. of flowers of sulphur to a cream with lemon juice; apply to the hat with an old brush. When dry brush off with a dry brush: *or* a solution of oxalic acid may be used, 1 oz. to ½ pint of water. Apply to hat with brush, rinse in clean water and dry.

Panama Hats should never be allowed to get wet, as they lose their shape, and are difficult to restore. They may be cleaned with magnesia, cloth-ball, or bread-crumbs. Very soft straws also may be treated in this way.

Black Straw. The shining varieties may be freshened by brushing over, when all dust has been removed, with a mixture of equal quantities of gum and ink. Dull black straw is best treated with sweet oil applied sparingly, and rubbed over with a cloth later to ensure dryness. Commercial preparations for renovating may be used with good results.

Coloured Straw. These may be freshened with an application of oil, and stiffened with gum rubbed well in.

GLOVES: Kid Gloves. See paragraph on use of petrol for grease marks.

Suede Gloves, buckskin, reindeer, etc. Remove grease with benzoline, clean with warm bran.

Chamois Leather. These should be washed on the hands in warm soapy water and rinsed in clean warm soapy water; moisture should be squeezed out gently and gloves pressed between a clean cloth. They should then be shaped (blowing into them separates the fingers) and placed in a moderately warm place to dry. From time to time rub between the hands during the drying to keep them pliable.

Washing Suede are washed as above, but rinsed in clear water.

CHAPTER XXV

HOUSEHOLD PESTS

SOME of the commonest household pests are referred to in this chapter. Information about others is available on inquiry at the British Museum (Natural History Section) or at the Royal Sanitary Institute, and more detailed descriptions of those here mentioned can, if desired, be obtained from the same source.

FLIES. Several varieties of flies infest houses, only one of which, however, is the true house-fly (*Musca domestica*). This fly may be distinguished from other species by the very conspicuous elbowed vein in each wing, which almost touches the end of the next

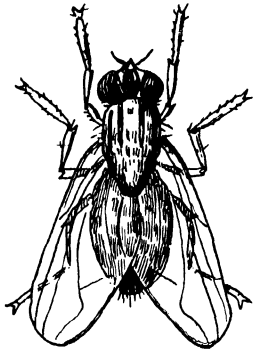


FIG. 69.—HOUSEFLY, ENLARGED.
Note the sharp angles in the large wing vein, by which it can be distinguished from other varieties.

vein (see figure). The Lesser House-fly, sometimes mistakenly thought to be a " young " house-fly, is smaller, and has no " elbow " in the end of the veins. It is the house-fly which is important for health reasons.

Life History. The house-fly begins breeding in spring, lays eggs in refuse, fresh stable manure for choice, or in other warm, moist places where there is plenty of organic matter to serve as food for the grubs. The eggs hatch in a time varying from a few hours to about three days depending on conditions of temperature and other factors, and become the familiar white maggots. These maggots, which live in the surface layers of the heap, as the lower layers are too hot, turn to the pupa stage (chrysalis) after forty-eight hours to three or four days, according to circumstances, and the

perfect fly emerges after a period of quiescence lasting again in proportion to temperature, from three and four days to several weeks. The fly, after emerging, is full grown, and undergoes no further development; small specimens of house-fly seen about are undersized, owing to a belated or checked development, and do not grow further. The female fly lays eggs a fortnight or more after emerging from the pupa case, when the process is again repeated. About 700 eggs can be laid on an average by a single fly during its life, the eggs being laid in five or six batches.

Habits. Flies are attracted to all kinds of carrion, and fæcal matter, which may possibly contain organisms of disease. They are also attracted by food of all sorts, especially bread, jam, cheese, and milk, over which they crawl, while feeding, and may deposit the disease germs upon them, giving rise to enteric, cholera, typhoid, summer diarrhœa, and other diseases. Hence the urgent necessity of preventing the fly from breeding; protecting food from contamination by flies; and destroying all flies seen.

Measures of Prevention. The best way of preventing flies is to allow no breeding places to exist, or to make it impossible for the eggs, if laid, to develop. Since stable manure is the favourable breeding ground, especially when fresh, this may be covered, allowing no entrance by flies; or the surface of the heap may be turned well, to bury eggs and maggots in the deeper layers, where they are killed by heat.

Refuse Heaps and similar collections should be regularly and frequently removed, at least once a week, and properly covered tins or receptacles should be used. *Sanitary systems* in country districts should be such that no flies have access to material possibly infected with disease.

All food is best kept covered with wire gauze, or muslin, to prevent flies from reaching it, and larders and storerooms rendered fly-proof by gauze over the windows and any ventilating holes.

Free use of fly-catchers and traps is recommended in places where flies are seen. Fly papers and dead flies should be burnt. The Blow-fly (Bluebottle) lays eggs in dead flesh, meat, game, etc., during the summer months, the eggs hatching as small wriggling worms. The parent fly, if unable actually to touch the surface of the meat, will sometimes drop the eggs on to it, provided the fall is only a few inches, and the meshes of the covering are sufficiently wide. Hence, all meat should be covered with very fine wire gauze, and so placed that in no place is it touching the gauze. The blow-fly will not attack poultry or game except where the flesh is broken; thus game that has been shot can be protected by wrapping in paper, while poultry killed by wringing the neck or cutting the throat can be kept a long time if the head and neck only are wrapped in paper.

CLOTHES MOTHS. The clothes moth, if allowed to multiply

unchecked, causes much damage among woollen material of all sorts. The adult moth lays its eggs in such material and dies, while the larva, when hatched, destroys the wool near it, making a case for itself, until it pupates in the case and emerges as the full grown moth in the following year. Darkness and warmth are essential to development.

Preventive Measures. Protect clothing from egg-laying by the moth by impregnating with substances repugnant to the insect, such as camphor, naphthaline, oil of lavender, sandalwood, and by wrapping furs, etc., in smooth sheets of newspaper, leaving no crevices into which the moth can enter. Moths dislike the coldness and smoothness of newspaper, and avoid it. As they dislike sunlight, occasional shaking and brushing of clothes and exposing them to sunshine for a short time prevent eggs from developing, but if they are once laid, no repellent substance placed among them will prevent their hatching.

FLEAS. The human flea breeds on dusty floors, in the cracks, and gives rise to much unpleasantness and annoyance, as it gets into beds and clothes. The floor may be scrubbed well, and cracks filled up; if badly infected, sprinkling the floor with flaked naphthaline and leaving twenty-four hours is recommended by experts. In washing walls or floors, a creosote preparation is considered best.

A great source of flea infection is from cats and dogs, which carry different species of fleas. All dogs and cats suspected of fleas should be washed with an insecticide, and their sleeping mats well shaken daily. Since they may in the first place get fleas from dirty outhouses, henruns, etc., these places should be kept clean by limewashing at intervals, and the animals attended to properly, so that unclean conditions do not arise.

Rats and mice are also great carriers of fleas and they must be eliminated.

Repellents, such as naphthaline, eucalyptus, etc., may be used on clothes if infection is feared.

COCKROACHES. (Black beetles.) These pests frequent warm places, and are most destructive to practically all animal and vegetable substances. When suspected, pyrethrum powder (obtained from a plant grown in California) should be well sprinkled round the stove and hot pipes persistently till the pest seems to have disappeared. They may also be trapped with deep jars containing stale beer, made easy of access by sloping sticks, so that they can crawl up, fall in and drown.

BED-BUGS. These disgusting creatures are generally, but not always, a result of neglect; they will travel to clean houses by cracks in walls, especially by the pipes, causing consternation to their unwilling hosts. Fumigation with sulphur may be used to get rid of them, and all bedding, etc., thoroughly overhauled, and if necessary, baked. A second fumigation should be repeated after

ten days, as the eggs are not affected by the sulphur, and will have hatched. In bad cases, the walls may have to be stripped and the paper burnt.

RATS AND MICE. *Rats* should be vigorously exterminated owing to the risk of plague-infected fleas, and for the damage they do to grain and live-stock. They live chiefly in stables, outhouses, and ditches and may be trapped, poisoned, or hunted. Special rat poisons should be used, according to directions, the incautious use of ordinary poison being liable to kill domestic animals also.

Mice are objectionable owing to the damage they cause to food, and their disagreeable odour. Cats will keep them down, if not overfed, but sometimes other methods are necessary. All holes used, or suspected of use, by mice, may be stopped up with plaster of Paris, and a free use of traps is often successful. It should be noted that mice have a very keen sense of smell, and traps should be baited by a person wearing gloves, or the human odour is detected by mice, and they will avoid the trap. All food should be kept very closely covered, and no crumbs or scraps allowed to remain on the floor. Mice will quickly desert a place where they are likely to starve. If poisons are used, special ones are preferable, as ordinary poison causes the mice to die in their holes, where they may cause much trouble by decomposing. Special poisons destroy the carcass without smell, and outside the runs and holes.

ANTS are sometimes found in the house ; they may have a nest in the skirting board, or may enter from outside. Careful inspection will often show the point of entry ; thorough sprinkling with pyrethrum powder or Keating's will generally get rid of them ; it should be repeated for several days until no more appear.

FOOD PESTS. It occasionally happens that insects are found in stored food, among the commonest of which are the following—

The Flour Moth lays eggs in or on sacks of flour ; these hatch into larvæ, which crawl through flour, leaving a silken trail, and causing it to web together in masses. If found in flour, the infected material should be burnt, and the receptacle thoroughly scrubbed before putting in fresh supplies. To prevent its occurrence, flour is best bought in moderate quantities and used quickly.

Weevils of various kinds sometimes occur in cereals such as rice. They may be killed by heating the affected material in the oven for some time, and the receptacle given a thorough cleaning out afterwards.

Mites of different sorts sometimes appear in flour, bran, etc. They may be killed by fumigating or baking, and sifting the material to remove the creatures. *Bran* is especially liable to contain a mite causing grocer's itch, and should be well baked before use on this account. Thorough cleanliness in storing and handling, and buying from good shops, is the best method of preventing trouble from insect-infected foods.

CHAPTER XXVI

HOME NURSING

WHILE not attempting to give any directions for Home Nursing, details of which can be obtained from the excellent handbooks available, it may be helpful to make some suggestions on the general management of the family health, and especially of sickrooms. Undue fussing about health is to be deprecated for all reasons, but no family, however strong, entirely escapes slight indispositions and trivial ailments not requiring medical aid. All who are in charge of a home or responsible for others should possess some idea of the use and administration of simple medicines, and of first-aid in cases of emergency, as well as enough knowledge to recognize when a doctor should be called in and when this is not necessary. Thoughtful attention to diet, exercise, and fresh air will prevent many ills, and when these do occur, prompt measures in the early stages frequently prevent the development of a serious illness. The wise housewife keeps a keen but unobtrusive watch on the health of the different members of the family, giving extra care and nourishment where delicacy is noticed, and deals in time with any threatening symptoms.

THE MEDICINE CUPBOARD. Although the promiscuous use of drugs is inadvisable, a store of simple remedies at hand is indispensable. All medicines should be kept in a cupboard under lock and key, and not on an open shelf or in an unlocked cupboard, in order to prevent interference by children and others, and to avoid the accumulation of dust. All poisons are best kept separately, also under lock and key, and clearly labelled ; they are very generally put into distinctive bottles, so that the possibility of a mistake is reduced to a minimum even if, as never should occur, they are fetched at night without a light. The medicine cupboard is fittingly kept in the housewife's bedroom, or in the nursery, where it must be well out of the reach of children. First-aid appliances also are useful, and a book on Home Nursing, giving instructions for dealing with emergencies of all sorts, is invaluable. A list of the contents of the cupboard should be attached to the door, so that a stranger or young person can fetch the right thing ; it may be helpful to indicate also the remedies for the commoner ailments. The following list suggests the things the cupboard should contain, specific remedies being added as occasion arises—

Scissors. Bandaging, 1 and 2½ inch
Boracic lint, powder and ointment
Embrocation, vaseline — For cuts, sprains, bruises, etc.
Court plaster, bundles of clean rag
Cotton wool.

Picric acid or ointment, or carron or olive oil.	For burns and scalds.
Some mild aperient, such as— Epsom and Glauber salts, rhubarb, magnesia, senna, etc., and cascara sagrada, either tabloid or solution.	
Sal volatile and smelling salts.	For faintness.
Aspirin, eucalyptus, ammoniated quinine, etc.	For colds and feverish conditions.

A bottle of household disinfectant, such as Sanitas or Jeyes' Fluid, a clinical thermometer, and a graduated medicine glass are necessary.

For slight disorders and ailments no special nursing is required, but when a serious illness is beginning proper arrangements for nursing the case have to be made. The essential things to remember in dealing with all illnesses are—

Absolute cleanliness of patient and his surroundings;

Plenty of sunlight and air;

Quietness and comfort for the patient.

Preparing for a Long Illness. The amount of preparation depends on the severity of the case, and whether there is an opportunity to get the room ready before the patient is moved into it. A large sunny room, facing south or south-east, is best, which has plenty of window space and ventilation, and a fireplace. The latter not only aids ventilation, but in even warm weather a fire may be necessary. Common sense must be exercised in deciding whether the carpet should be removed or not for an illness not infectious, but all superfluous hangings, ornaments, and furniture, which will harbour dust and make the daily dusting more difficult, should be taken away. If the carpet is removed, the floor must be scrubbed with a disinfectant solution. The sick room requires to be restful and pleasing to look at, neither bare nor overcrowded, and, moreover, easily kept fresh-looking and bright. A single bed with wire and hair mattresses is best, and if of metal, is more easily cleaned after the illness than wood; for easy management and a greater amount of fresh air it is best if not placed along a wall. All dusting should be done with a damp duster, to avoid raising dust. A table for the patient's use, and another for the paraphernalia of medicines, etc., are necessary, the latter being out of the patient's sight, if possible.

During the illness, the room must be kept as clean as possible, this being done early in the day and quietly and quickly to avoid disturbing the patient, all dusting being done, as in the preparation, with a damp duster. The bed may be entirely covered with a clean sheet during sweeping, after which it must be removed very carefully.

Infectious Illnesses. Owing to the ease with which infection can be transmitted, the utmost care is necessary in preparing for an infectious illness. To ensure that every possible source of infection is removed, therefore, the carpet and all hangings are taken away, also some of the pictures, if there are many, and all superfluous ornaments, valuable books, and unnecessary furniture. A sheet wrung out of 1 in 20 carbolic solution (1 oz. to a pint of water), may be hung outside the door, and re-damped when necessary.

Disinfectant solutions should be used for washing the floor, and for soaking all linen, both bed and body linen, used in the room, before it is washed. It is generally allowed to soak about twenty-four hours, and then boiled before being laundered, in order to kill any germ life which may still be present. All utensils used by the patient for meals should be disinfected, preferably by boiling, before washing, the latter being done in the room, and the articles used should on no account get mixed with those used by the rest of the household. The articles are best put into cold water brought up to the boil, and boiled for five minutes or so. Detailed instructions for dealing with excreta should be obtained from the doctor, but very great care must be taken to disinfect properly and to dispose of them as soon as possible. No intercourse is permissible between patient and the rest of the family, and the nurse herself must be most punctilious in disinfecting her hands after doing anything for the patient, and in keeping herself and her clothes very clean.

After the Illness. Complete disinfection of the room is necessary including the clothes of the nurse and of everything used by the patient which cannot be destroyed. Books given to read should be of little value and should be burnt, as they cannot be satisfactorily disinfected. The disinfection can be carried out either by the housewife herself, or by the Public Health authorities, the materials generally used being sulphur or formalin. All garments which cannot be washed are hung up in the room, and the pillows and mattresses, if not sent to a disinfecting station, are exposed. Cupboards and drawers are opened, the windows and chimney closed, and all cracks and holes of any sort sealed by brown paper pasted over. Disinfect with a formalin spray, or with burning sulphur; the latter is more efficient especially after a very infectious case. After spraying thoroughly everywhere, the door is closed and sealed. With sulphur, the material, generally in block form, is placed in an iron shovel or a tray, over a pail of water, and ignited by pouring methylated spirit over and setting a match to it, and left for at least twenty-four hours before opening up and thoroughly ventilating the room, after which it is thoroughly cleaned and put straight. After highly infectious diseases such as scarlet fever, the wallpaper must be removed and burnt, and the walls washed with a disinfectant solution before re-papering.

CHAPTER XXVII

INSTITUTIONAL MANAGEMENT

THIS is a vast subject, rapidly expanding in scope, and ideas concerning it are changing considerably and fundamentally. Whereas up to quite recently it was thought that any one with a Domestic Science Training could undertake practically any kind of management, it is now recognized that a specialized training from the beginning is most desirable and necessary. Broadly speaking, the student with good training in the basic principles of Housecraft can, with intelligence and application, manage successfully small establishments up to 40 or 50 people. Above this the problem presents completely different aspects, for which a different training and outlook are required, and it is desirable that students should endeavour to obtain a wide view of the scope of modern institutional management, selecting a form that particularly appeals to them, and should become thoroughly trained for it. There seems no conceivable activity of man that may not be covered by the term "Institutional Management." Such places may include the entire care of his health from birth to death—maternity homes, welfare centres, play centres, nursery schools, school feeding, boarding schools, colleges, hospitals of all kinds, nursing homes, and so on, each one requiring a special outlook. On the other hand, there are those institutions that cater for his living accommodation—hostels, clubs, hotels of all sorts, sizes, and conditions, each again with its special emphasis. Others cater only for food—restaurants, industrial canteens, and so forth, with little or no resident aspect; while in others, as in blocks of flats, the problem is connected with the business running of a larger concern. There is, in fact, no end to the multiple variety of the work undertaken in the name of Institutional Management. Dietetics, business affairs, accounts, costing, small and large scale entertaining, and the ever-present human factor, all must be taken into account. It is obvious that nothing can be included here that could pretend to do more than indicate the barest outline of the subject, and the following remarks are intended only as slight guides to such students as may find themselves called upon to manage small establishments not much larger than an ordinary house—only instead of a family there is a group of unconnected individuals relying for their comfort and well-being upon the efforts of one or two persons and an assistant staff, where the main aim of the responsible person is to supply comfortable lodging and good food to the people in her charge, combined with the best conditions she can provide for the staff responsible for carrying out her intentions.

It is most desirable that the person responsible for the comfort of many people should have not only a clear idea of what she should do, but a good, practical, working knowledge of all the kinds of work to be done, even though she may never be called upon actually to do all of it. She should be a good cook, for instance, in order to know and to criticize what is going on in the kitchen; she should know how all kinds of cleaning should be done in order properly to supervise the work of the housemaids, and so on. She must have a sound knowledge of how to buy stores, food, and equipment to the best advantage, and how to make the best and most economical use of them to produce the utmost value. In addition, she should be familiar with the principles of decorating, furnishing, and the buying of furniture; and last but probably the most important of all, a knowledge of human nature and of how to get on with the various people who will be working with her. Some knowledge of elementary book-keeping will lessen the terrors of those necessary worries—proper accounts, in however simple a form—and should enable her to avoid excessive expenditure in any direction, and also to plan the best possible use of the money available to her. Intelligence, forethought, planning, and a real interest in people and the results of her work are essential qualities for success.

Establishments vary considerably in size and kind, and different methods of approach are demanded. Even among small institutions, differences may be great, but there are a few general principles that may be applied to all kinds, and within the specified limits, to any number of people.

1. *STORES.* The proper management of stores, proper buying when prices are favourable, and a proper foresight are probably the basic requisites for a well-run establishment, be it a private house or a small hotel. In some places, it may be the sole work of one person to take charge of the storeroom, but in most small establishments the work would devolve upon the housekeeper. It is necessary that accurate and up-to-date records be kept, of stores both issued and received, and of those in stock at any one time, together with the prices paid. Various methods of tabulating this information are used, into which it is not proposed to enter here. It is essential, however, that whatever method is used should be clearly understood and applied by the responsible person. Special times for the issuing of stores, daily or weekly as circumstances dictate, should be strictly observed, and staff should be trained to look ahead in their possible requirements to avoid running short before the next time of issue. Undue drawing of stores, in excess of reasonable requirements, must, however, be guarded against. It is usual to make one person in each department of work responsible for drawing stores for that particular department: for example, the head housemaid would draw all the cleaning materials required by herself and her fellow housemaids, the cook for the kitchen staff, and so on.

In buying, and where circumstances justify it, dry stores that will keep should be bought in wholesale quantities, and kept in suitable places to maintain them in the best condition. Such goods would be soap, soda, cleaning materials, flour, cereals such as rice, sugar, dried fruits, etc., and any kind of food that will not deteriorate with keeping, such as tinned goods. Perishable foods such as meat, vegetables, fish, etc., may, if large quantities are used, be also bought wholesale, but delivered as required, and kept for only the shortest possible time before using. In small accounts it may not be possible to purchase such perishable foods at a wholesale rate. Proper refrigeration for the daily storage of milk, butter, etc., should be general where much food is handled, and should be insisted upon by the responsible person. Perishable food should not be kept in close contact with non-perishable, and if possible the storeroom proper should be kept only for dry foods, cleaning materials, and tinned goods; while meat and milk, fish, etc., should be kept and dealt with in another room or another part of the storeroom. Cooked food left over or awaiting use should, of course, be kept in the larder or refrigerator, both of which must be looked over daily to avoid waste and to keep them clean and wholesome.

2. *MANAGEMENT OF LINEN.* The care and keeping of linen is an important item in all establishments, but where there is a good deal of wear and tear, and frequent launderings in proportion to use, as in an hotel, it is even more important to make the most of every kind. Only the best qualities obtainable should be bought in the first place, as they will stand up best to the inevitable strain. In calculating the amount to allow, two pairs of sheets, with 5 or 6 pillow cases, and three of everything else, for every bed, is the minimum that must be purchased, and is only enough to have one in use, one at the laundry, and one under repair or in readiness. A careful account of all the linen in stock must be kept together with the amount and quantity of each kind originally purchased; this is to enable a check to be kept on the even use of all units, and to start replacements as soon as any sign of wear begins to appear. It is not a good plan to put off buying, when circumstances permit otherwise, until things are so worn as to be almost useless, but to get in a little new stock as occasion offers, in order to have new, unused stock ready to fall back upon in an emergency. It is not necessary to have a large reserve, but a little of everything in most constant use is only common sense. Everything should be clearly and indelibly marked as soon as purchased. Sometimes this is done at the shop, but if not must be attended to on delivery, and the purchase entered in the appropriate book. The general rules for storing and maintaining linen are set out in Chapter XXIII, page 245, and the repair of worn articles as this becomes necessary is much the same as in a household. Careful counting and listing of laundry both going and coming back is essential, duplicate lists

should be made, and every one handling linen should be made to keep a list of all that is handed in soiled, and to sign for all clean issues. Mending should be done as soon as possible when it is noticed, immediately on return from the laundry. In anything larger than a private house one or more persons are constantly employed in the linen room.

3. *CLEANING, REDECORATION, ETC.* It must be emphasized that the cardinal rule is the maintenance of all parts of the establishment in a cleanly and good condition, and the method of attaining this must depend on circumstances. Hard and fast ideas of "daily," "weekly," and "spring" cleaning may require modification, e.g. different methods must be used for such places as hotels (rooms in constant occupation by different people), schools (rooms vacant all at one time at regular intervals), resident establishments (rooms occupied more or less continuously by the same people).

4. *STAFF.* The general principles for staff are set out on pages 221–4, and are equally applicable to small institutions. Large ones are not included in this book.

APPENDIX I

HOME-MADE CLEANSERS AND POLISHERS

SCRUBBING MIXTURE. Take equal quantities of soft soap, whiting, and silver sand; to each pound of dry ingredients add 1 pint of water.

Dissolve the soap in the water, using an old saucepan; add the other ingredients and boil up until thick and creamy; stir occasionally with an old spoon or stick. When ready pour into a jam jar and use as required.

Use. To scrub white wood, especially if neglected. To scour metals such as iron, galvanized iron, neglected tin. To clean rough stoneware.

SCOURING MIXTURE. Mix together two parts of any commercial soap powder and one part of powdered pumice. Store in a dry tin with holes in the lid.

Use. To scour hard metals. To scour stone such as sinks, unglazed tiles, etc.

HOME-MADE PLATE-POWDER. Mix together eight parts of refined whiting and one part jewellers' rouge; store in a dry box or tin.

Use. To polish silver and plated articles. It may be applied dry or mixed to a cream with water.

LIQUID SILVER POLISH.

3 oz. precipitated whiting,
¼ oz. jewellers' rouge,
½ oz. shredded soap,
½ pt. water,
1 tablespoonful ammonia,
2 tablespoonfuls methylated spirit.

Dissolve the soap in the water and when sufficiently cool pour into a bottle containing the dry ingredients. Add the methylated spirits and the ammonia. Keep tightly corked and shake well before use.

Use. For silver and plated ware, especially that heavily embossed.

TO PRECIPITATE WHITING. Tie some lumps of whiting loosely in a piece of muslin and suspend in a jug of cold water; eave overnight for the whiting to soften and pass through the muslin, leaving the grit behind.

Remove muslin and grit from water, and when the whiting has sunk to the bottom, pour off the water and put in a warm place to dry.

Powder finely before using.

Use. To polish silver and soft metals. To give a final burnish to copper and brass. In conjunction with soap it may be used as a scourer for fine metals, white paintwork, stoneware, etc., where much friction must be avoided. To form an important ingredient in many polishes and cleaners.

TO PREPARE ASH. Shake the ash from the ashbox through a piece of muslin.

Use. To polish steel; damp with water or paraffin or apply dry. To scour earthenware and enamel; use on a soapy cloth.

METAL POLISH.

1 oz. soft soap,
½ pt. boiling water,
2 oz. rottenstone or powdered bathbrick,
2 tablespoonfuls of ammonia.

Dissolve soap in the water; when cool pour it into a bottle containing the rottenstone or bathbrick. Add the ammonia and cork tightly. Shake well before use.

Use. To polish ornamental brass and copper.

PEWTER POLISH.

½ oz. soft soap,
¼ pt. boiling water,
2 oz. rottenstone,
4 tablespoonfuls turpentine.

Make in the same way as metal polish, adding the turpentine last.

CARPET SOAP. Dissolve ½ oz. shredded soap in a ¼ pt. water; when cool add 2 teaspoonfuls of ammonia and store in a flat tin.

Use. To shampoo carpets and carpet rugs.

MARBLE PASTE. Mix together equal quantities of soft soap and precipitated whiting on a smooth surface with a knife.

Use. To clean marble.

MARBLE CREAM.

1 oz. precipitated whiting,
1 oz. pumice powder,
2 oz. crushed soda.

Boiling water to make a cream with the dry ingredients.

Use. For obstinate stains on marble. Cover stain with cream and leave 24 hours.

FURNITURE CREAM. Dissolve 1 oz. Castile soap in ½ pt. boiling water.

Dissolve 1 oz. beeswax and 1 oz. white wax in ½ pt. turpentine.

When both are cool, but not set, mix together, beating well until the whole is of a creamy consistency.

Use. To polish plain-polished wooden surfaces.

FURNITURE POLISH. Mix together two parts of linseed oil and one part each of turpentine, vinegar and methylated spirit. Keep in a well-corked bottle and shake well before using.

Use. To polish polished wood, especially carved wood. To polish varnished wood, dark wicker, glazed tiles, japanned or enamelled ware.

LEATHER POLISH. Mix together two parts linseed oil and one part vinegar.

Use. To clean and polish leather upholstered furniture and leather articles of a similar leather, e.g. handbags, blotters, etc.

FLOOR POLISH. Shred some beeswax into a jar and cover with turpentine ; put in a warm place but away from a flame, to dissolve the wax.

Use. Use sparingly on a woollen cloth for polished wood floors and linoleum.

TO STAIN WOOD FLOORS. Dissolve 2 oz. of permanganate of potash in 1 pt. of boiling water ; stir before using.

Clean and scrub the floor thoroughly, and if necessary fill any holes with putty when floor is dry.

Make the floor as smooth as possible by hammering in any projecting nails, and planing the edges of the boards if these are rough.

Apply stain by means of a pad of rags secured to a stick. Allow each application to dry, which it does quickly, and put on as many as required, according to the depth of colour desired.

When dry rub in linseed oil generously and leave for 24 hours. Polish with a wax polish.

Instead of the above stain, that obtained by stewing logwood chips may be used instead. Stew ½ lb. of chips in a quart of water till all the colour appears to have been extracted, and apply to the floor with a brush while the solution is still hot. As many coats as liked may be applied. Finish as above.

COMMON CLEANSING AGENTS

AMMONIA. Liquid ammonia, a solution of ammonia gas (NH_3) in water, forming ammonium hydrate (NH_4OH). A pungent alkali ; " 88 " or " 880 " solution is the strongest solution sold, having a specific gravity of ·88.

Use. For softening water ; emulsifies grease.

ASH. The residue of mineral matter left on burning wood or coal.

Use. When finely sifted, for polishing steel ; for scouring burnt kitchen utensils.

BATHBRICK. A preparation made from the ooze of the river bed at Bridgwater in Somerset, sold in the form of a brick.

Use. For scouring and polishing hard metals, when powdered ; for scouring earthenware sinks.

BENZENE (or BENZOL). A substance obtained from the distillation of coal tar.

Use. As a grease solvent, and for removing paint, tar, etc.

BENZINE. See Petrol.

BLACKLEAD. Graphite or plumbago, a form of pure carbon in a finely-divided condition.

Use. For polishing grates, etc., made of iron.

BORAX. Sodium borate, a white crystalline powder.

Use. To soften permanently hard water; for whitening and slightly stiffening fine white cotton or linen materials.

BRAN. The husk of the wheat grain, removed during milling.

Use. For dry cleaning; when dry and warm as a grease absorber; when made into an infusion, for washing coloured cretonnes, holland, etc.

EMERY. Powdered carborundum or corundum, a very hard compound of silica and carbon.

Cloth—Paper. Cloth or paper smeared with glue and sprinkled with emery powder; obtainable in various degrees of fineness.

Use. For polishing hard metals, such as steel, etc.

FULLER'S EARTH. A kind of clay, which readily absorbs grease.

Use. For absorbing grease from wood and from coloured materials; not suitable for white, owing to its brownish colour.

HEARTHSTONE. A soft stone used for whitening hearths, steps, etc.

HYDROCHLORIC ACID (spirits of salts, muriatic acid). A mineral acid, corrosive and poisonous.

Use. In dilute solutions for removing obstinate stains from lavatory pans, and from neglected metals.

JEWELLERS' ROUGE. A pink oxide of iron.

Use. For polishing silver and tortoiseshell; a constituent of commercial silver polishes.

LINSEED OIL. The oil from crushed seeds of the flax plant; hardening on exposure to air.

Use. A constituent of paint and furniture polishes; darkens and slightly polishes unpainted wood such as oak.

LOGWOOD CHIPS. The chipped wood of a tree, *Heamatoxylin campeachianum*, which gives a red dye when boiled with water.

Use. For staining floors as an alternative to potassium permanganate.

MAGNESIA. The oxide or carbonate of magnesium; a fine white powder.

Use. In dry-cleaning white felts, furs, and woollen goods.

METHYLATED SPIRIT. Methyl alcohol (wood spirit); inflammable at room temperature.

Use. For giving gloss and brilliancy to windows, etc., and silver; used in varnishes and lacquers as a solvent for the shellac.

OCHRE, YELLOW AND RED. Metallic oxides, yellow or red in colour, used as pigments.

Use. For hearths and steps instead of whitening them with hearthstone.

OXALIC ACID. An organic acid found in rhubarb, sorrel, etc. It is also used in the form of Salts of Lemon, or Salts of Sorrel, which are the potassium salts of the acid. Highly poisonous.

Use. In metal polishes and for the removal of stains from lavatory pans, etc. In conjunction with sulphurous acid it may be used for the removal of iron stains from cotton and linen in laundry work, and in certain bleaching operations. Use a 10 per cent solution (1 oz. in half a pint of water) for neglected pans, and proceed as for Spirits of Salt.

PARAFFIN. A product of the distillation of crude petroleum. Not inflammable at ordinary temperatures, but becomes so on warming.

Use. As an illuminant and fuel; for cleaning neglected and greasy iron and steel, and greasy earthenware in conjunction with bathbrick. Used in cleaning dark paint and dark wicker.

PETROL (BENZINE). Not to be confused with Benzene. A product of the distillation of petroleum. Volatile and highly inflammable.

Use. For dry-cleaning and for removing grease from materials.

POTASSIUM PERMANGANATE. A purple crystalline substance easily soluble in water, forming a deep red solution which turns brown when exposed to air.

Use. On account of the brown stain formed on exposure, it is used for staining floors, etc. As a disinfectant in very dilute solutions.

PUMICE. A light porous rock of volcanic origin; when ground forms a fine powder.

Use. As an abrasive for hard metals, earthenware, and enamel, and for removing stains from hands.

ROTTENSTONE. An impure form of limestone.

Use. A mild abrasive for copper, brass, etc.

SALT. Common salt, sodium chloride.

Use. A mild abrasive and disinfectant. For stiffening brush bristles, wickerwork, etc.; to fix colour after washing.

SAND. A hard compound of silica in the form of sharp-edged grains. The white kind, known as silver sand, is best for household purposes.

Use. A hard abrasive, for coarse and hard wood, stone, etc.

SOAP—Soft. Compounds formed by boiling together salts of potassium and fatty acids, and from which the glycerine formed during the process has not been removed. There is a good deal of water and generally some excess alkali.

Hard. Soaps made as above, with sodium salts in place of

potassium; the glycerine is removed and the soap finished in various ways according to purpose for which it is intended.

Yellow. Ordinary hard soap, which may or may not contain excess alkali.

Castile. Genuine white Castile is the purest form in which soap can be obtained.

Various soaps for household use are less refined, and contian impurities which sometimes form streaks; such are blue mottled soaps, etc.

COMMERCIAL SCOURING SOAPS AND POWDERS. These are generally a mixture of dried soap, soda, and an abrasive, and may be purchased either in powder or block form.

SODA. Sodium carbonate, washing soda; an alkaline salt, in clear crystals until exposed to air, when it loses water, becoming opaque and powdery. In this form it is much stronger.

Use. As a water softener, and for emulsifying grease.

STEEL WOOL. Steel in the form of fine twisted filaments; obtainable in various grades of fineness.

Use. For scouring aluminium and hard metals.

SWEET OIL. Generally olive oil; but cheap "salad oils," which are not olive oil at all, serve for household use.

Use. For rubbing over steel, iron, and other metals when storing, or after cleaning; for preserving patent leather; as a lubricant for stiff locks, taps, etc.

TURPENTINE. The exudate from a certain kind of resinous tree.

Use. As a constituent of paint, therefore it softens and dissolves paint and tar stains; for giving a more rapid polish when black-leading grates; as a constituent of furniture creams and polishes.

VASELINE. Petroleum jelly; a residue of petroleum distillation.

Use. For preventing rust on stored steel; for keeping patent and other leather pliable; as a lubricant.

VINEGAR. Made from malt, and contains acetic acid, an organic acid which with copper and its compounds forms poisonous salts. Dissolves carbonates, e.g. chalk.

Use. To remove fresh ink stains; to dissolve the chalky deposit from water bottles, etc.; for giving a polish to glass and for cleaning polished wood. Brightens colour; and cleans neglected metals.

WAX (Bees'). Wax made by bees for the honeycomb. Generally yellow in colour and very pure.

Use. In furniture creams and polishes and for home-made polish when dissolved in turpentine.

(*White*). Paraffin wax, left after the distillation of petroleum.

Use. As above.

WHITING or WHITENING. Chalk (calcium carbonate) in a purified form. *Precipitated* whiting—whiting mixed with water and allowed to settle; when dried it is free from dust and grit, and is very soft. Is dissolved by acids, and is deposited from temporary hard water on standing or boiling.

Use. As an abrasive and polishing agent for soft metals, and for burnishing hard ones; gives a polish to mirrors, windows, etc.; for cleaning white paint.

ABRASIVES

In order of fineness

- Fine: Whiting, Jewellers' Rouge
- Medium: Rottenstone, Salt, Ash
- Hard: Bathbrick, Pumice, Sand, Steel Wool, Emery

ACIDS

Hydrochloric Acid
Vinegar (Acetic Acid)
Oxalic (Salts of Lemon)

ALKALI

Ammonia

ALKALINE SUBSTANCES

Soap (Household)
Soda

GREASE ABSORBERS

Bran
Fuller's Earth

GREASE SOLVENTS

Benzene
Petrol (Benzine)

GREASE EMULSIFIERS

Ammonia
Soap
Soda
Paraffin

PAINT & TAR REMOVERS

Benzene
Petrol
Turpentine

DRY-CLEANING AGENTS

Benzene
Petrol
Magnesia
Bran
Fuller's Earth
Salt

LUBRICANTS

Vaseline
Sweet oil

APPENDIX II

QUESTIONS AND PROBLEMS

CHAPTER I

CHOICE OF HOUSE

1. What points would you look for when selecting a house (*a*) in a town ; (*b*) in the country ? What factors would influence your choice ?

2. As the owner of a house in a country district where there is no sewage system, describe in detail how you would set about installing satisfactory sanitary arrangements, giving approximate costs.

3. Go over a house in course of construction in your neighbourhood, and comment on the planning and the materials used. Find out the cost of construction, if possible, and note how far labour-saving has been considered. Suggest any possible improvements that could be made without materially affecting the cost. Illustrate your answer by sketches or diagrams.

4. Describe the arrangements for supplying water to the house in which you live ; discuss its source and describe how you would ascertain its purity.

CHAPTER II

LIGHTING AND HEATING

1. What are the essential points of good lighting ? How would you secure it in your own home ?

2. What are the principles underlying good ventilation, and how are they applied in the ventilation of (*a*) a private house ; (*b*) a schoolroom ; (*c*) a theatre ?

3. Describe what you consider a satisfactory method of warming a moderately-sized town house where expense is a consideration.

4. Discuss the different methods of warming a large country house. Which would you choose and why ? Give the approximate cost of installing and running it.

CHAPTER III

HOT-WATER SUPPLY, ETC.

1. A housewife finds that the good modern range installed in her house is too large for her requirements and too expensive for

daily use. How can she cope with the difficulty without incurring a large outlay ?

2. Compare the relative values for cooking purposes of the following : oil, gas, coal, electricity, anthracite.

3. Discuss the various forms of oil cooking-stoves on the market, and describe one which you consider suitable for the needs of a small family.

4. What are the essential points to be looked for when choosing a gas stove ? Describe the construction of a good one, and illustrate by a diagram.

5. How would you ensure a plentiful hot-water supply when gas or coal only is used for cooking ?

6. Give a diagram of any coal range with which you are familiar, showing the direction of the flues. Explain how the heat is regulated ; what do you understand by " top " and " bottom " heat ?

7. What is your opinion of the various convertible ranges now on the market ? What advantage, if any, do you consider they have over the ordinary coal range ?

8. What measures would you take to ascertain the amount of each of the following fuels used during a week : gas, coal, oil, electricity ? Find out, by actual practice with any fuel with which you are familiar, the cost of a day's cooking. Describe your methods in detail.

CHAPTER IV

FLOORS, ETC.

1. Trace the development of floor coverings from earliest times to the present day.

2. How would you deal with the floors in an eight-roomed house occupied by a doctor and his family ? Give reasons for your choice.

3. Discuss the suitability of various types of carpeting for (*a*) a drawing-room ; (*b*) stairs ; (*c*) bedroom ; (*d*) lounge.

4. Show how you would calculate the amount of carpeting required for making a carpet square in your own bedroom.

CHAPTER V

WALL COVERINGS, ETC.

1. Show in detail how you would calculate the amount and cost of paper required for papering a room in your own home.

2. Give a brief description of the wall coverings available. In what circumstances would you employ each ?

3. Discuss the principles of good window draping. Suggest

suitable treatment for windows in (*a*) a morning-room ; (*b*) a drawing-room, opening on to a lawn ; (*c*) a nursery.

CHAPTER VI

DECORATION, FURNISHING, ETC.

1. What do you understand by " Period Furniture " ? Describe the chief characteristics of any two styles.
2. Give a brief description, with costs, of the furniture you would choose to furnish the following : (*a*) a four-roomed flat for two girls earning their own living ; (*b*) an eight-roomed house for a family of four.
3. What principles would guide a housewife in her selection of beds and bedding ?

CHAPTER VII

EQUIPMENT, ETC.

1. Write a short essay on the manufacture of modern china.
2. What are the essential points in the selection of china and glass ? Make a list, with prices, of the quantities required by a newly-married couple.
3. Give a list, with prices, of the kitchen equipment required by people of moderate means. Where possible, give reasons for your selection.

CHAPTER VIII

CLEANING EQUIPMENT, ETC.

1. Classify the different types of vacuum cleaners on the market. State the principle upon which each class works.
2. Suggest with a view to labour-saving what you consider an adequate cleaning outfit for the home.

CHAPTER IX

NATURE OF CLEANING

1. Why is the removal of dust and dirt so important ? What means are employed to carry this out in the most hygienic manner ?

CHAPTER X

CLEANING OF WOOD

1. Give full directions for cleaning each of the following, giving reasons for the methods employed : (*a*) kitchen table with a drawer ; (*b*) a wire sieve ; (*c*) a pastry board ; (*d*) a wooden floor.

2. Why are different methods employed for the cleaning of plain, painted and polished wood? Illustrate your answer by giving directions for cleaning representative articles.

CHAPTER XI

CLEANING OF METALS

1. What do you understand by the phrase "tarnishing of metals"? How could you prevent or lessen this?
2. What would guide you in your choice of a cleaning agent when dealing with metals? Give a list of the abrasives known to you, and indicate for which metals they may be used.
3. Give full directions for cleaning the following: (*a*) a tin-lined copper saucepan; (*b*) a rusty steel fender; (*c*) an aluminium preserving pan; (*d*) an iron saucepan; (*e*) a neglected baking tin; (*f*) a tin kettle.
4. Clean silver articles by as many different processes as possible. Keep a careful record of the results and embody them in a statement showing the comparative value of each method.
5. Discuss the methods by which brassware may be cleaned. Illustrate your answer fully.

CHAPTER XII

CLEANING OF STONE, ETC.

1. Explain how you would clean the following, giving reasons for the methods you choose: (*a*) tiled floor; (*b*) stone steps; (*c*) porcelain-enamelled bath; (*d*) stoneware sink with a tiled backing; (*e*) a discoloured marble mantelpiece.
2. How would you deal with the problem of limited storage room as applied to china and glass? State clearly the means by which these can be kept in good condition.

CHAPTER XIII

CLEANING OF FLOOR-COVERINGS, ETC.

1. Discuss the treatment you would give to the following: (*a*) American cloth covering a kitchen table; (*b*) cork carpet in the nursery; (*c*) inlaid linoleum as surround in bedroom.
2. Describe the home treatment suitable for carpets during spring-cleaning.
3. Give your own views upon modern labour-saving methods of cleaning carpets as compared with sweeping.
4. Make a descriptive list of the materials of which mats are made. Give directions for cleaning (*a*) a door mat; (*b*) a leopard-skin rug; (*c*) a thin rush mat.

CHAPTER XIV

CLEANING OF BRUSHES, ETC.

1. Give a list of the household brushes necessary to the efficient working of a house. Design a useful and convenient storage cupboard for these and accessory articles.

2. How may the following be cleaned: (*a*) a silver-backed hair brush; (*b*) a carpet sweeper; (*c*) a long-handled hair broom; (*d*) a fibre brush?

CHAPTER XV

CLEANING OF RANGES, ETC.

1. Give detailed directions, with a diagram, for the cleaning of any make of closed coal range known to you.

2. Give an account, with prices, of the lamps you would select for a country house where these were to be the sole source of illumination. How would you maintain them in good working order?

3. Upon what does the efficient working of a gas-stove depend? What hints can you give to a novice on the economical use of gas?

CHAPTER XVI

LAYING MEALS, ETC.

1. Draw up the instructions you would give to a young parlour-maid for (*a*) clearing the breakfast table; (*b*) laying the table for luncheon; (*c*) bringing in afternoon tea; (*d*) waiting at dinner.

2. Describe how a housewife, single-handed, could successfully manage a small dinner party.

3. Give full directions for serving a dinner *à la russe*.

CHAPTER XVII

DAILY AND WEEKLY CLEANING, ETC.

1. Enumerate the renovations that might be carried out by the housewife during spring-cleaning. Describe four fully.

2. Describe fully how you would carry out the weekly clean of two bedrooms in the same morning.

3. Give a brief description of the work entailed in opening up a house after a prolonged absence.

4. What is the importance of "daily work" in the house? How may it be successfully carried out?

5. Distinguish between the care given to the following articles (*a*) weekly; (*b*) during the spring-cleaning:—beds and bedding, a wicker chair, pictures, paint work.

CHAPTER XVIII

MOTION STUDY

1. Analyse the arrangement of the kitchen with a view to labour- and time-saving. Make such feasible improvements as will reduce the walking circuit to a minimum.
2. Give your views on the value of Time- and Motion-Study to the housewife.
3. Carry out a morning's cooking, and make a note of the time taken for each step. From the results find out where time has been wasted and unnecessary movements made. Rectify this, and in repeating operations endeavour to effect a saving in time and movement.
4. Critically examine in a similar manner any other household operations and discuss the results arrived at by the experiments.

CHAPTER XIX

INCOMES, ETC.

1. Plan out the income of a teacher who is earning £300 per annum and is sharing a flat with a friend.
2. Suggest how the weekly wage of a farmhand could best be spent. He has a wife and two young children.
3. Suggest how the money for food could be laid out to the best advantage in each of the above homes ; give menus, quantities, and prices.
4. Show specimen pages from the daily, weekly, and monthly account books of the teacher in Question 1.
5. Give hints to a housewife on choosing game, meat, fish, and vegetables.
6. Enumerate and discuss the causes of the fluctuations in prices.
7. Write a short essay on Thrift and Economy in the Home.

CHAPTER XX

LABOUR-SAVING HOUSE, ETC.

1. Suggest the labour-saving equipment that would be suitable for homes where the yearly income is £1,000, £600, and £300 respectively. Give prices and illustrations.
2. Show how you would plan out, and prepare for, the following pieces of work to be done in a morning : cook a lunch for two people, mend a hedge-tear in skirt, wash a white jumper and a pair of stockings, lay the luncheon table.
3. Cook a dinner on a gas stove and find the cost of cooking the meal. Cook exactly similar dinners on an oil stove and on a coal range ; find the costs in each case and compare the results.

4. What steps would you take to obtain a good servant, and to retain her in your employ ?

CHAPTER XXI

TIME-TABLES

1. Plan out a time-table for the running of a house where two maids are kept. Show the arrangements made for free time.
2. Plan out a time-table for the working of a five-roomed flat, occupied by a mother, father, and a child of six months. A woman gives help for two hours daily.

CHAPTER XXII

STOREROOM

1. How would you stock a store cupboard for a family of six living in the country ? Show the amounts and prices of stores bought, and indicate the saving that has been made by buying in large quantities. State the methods of storing each kind of goods.
2. Give prices and illustrations of good types of meat safes now on the market. For what purpose is a meat safe used ? Describe how you would place it (*a*) indoors ; (*b*) out-of-doors.
3. Describe what you consider a good storage place for coal. What advantage, if any, is there in buying coal during the summer months ? What are the characteristics of a good coal, and what varieties are on the market ? Give the current prices per ton.
4. Coal is considered an expensive form of fuel. What can you suggest to lessen the amount burnt ?
5. Describe how rubbish may be disposed of (*a*) in a small town flat ; (*b*) in a large institution.

CHAPTER XXIII

LINEN CUPBOARD

1. Give a list of the household linen that a young housewife would be likely to buy when she can lay out £40. Give prices and state materials used.
2. What amount of household linen would be required by a household consisting of six people and two maids ?
3. What arrangements would you make for the storage of linen where no linen-room was available ? What means would you take to keep the linen in good order and repair ?

CHAPTER XXIV

CARE OF CLOTHES

1. Describe how you would clean the following: (*a*) a tweed coat; (*b*) a grey felt hat; (*c*) a cloth coat with a fur collar and cuffs.
2. What garments would you consider suitable for a schoolgirl of 12 to 14 years? What instructions would you give her on taking care of her clothes?
3. How would you plan out a dress allowance of £40 for one year?

CHAPTER XXV

HOUSEHOLD PESTS

1. What measures would you take to prevent the food under your care being contaminated by flies?
2. What hints can you give on keeping furs free from moth? What remedy is there for furs which have been attacked by moth?
3. Give directions for ridding a house of mice.

CHAPTER XXVI

HOME NURSING

1. By a diagram show the arrangement of the bedroom of a patient who has just had an operation.
2. How would you set about disinfecting a room after an infectious illness?
3. What knowledge of nursing and simple ailments should a housewife possess?
4. What ailments could a housewife deal with successfully without calling in medical aid? Indicate treatment given in each case.

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