How to Do Home Work Right

BY
THE EDUCATIONAL STAFF
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INTRODUCTION

There is to-day a strong movement back to the old-time faith that the home is the best laboratory and workshop for a boy or girl. The system of giving school credits for home-helping is becoming very popular. The only objection to it seems to be that many parents want to be sure that they are able to show their children just how to do work right. Many young people to-day, too, are realizing that much of the work there is to do at home is very interesting, and that all of it is important to those who expect to spend most of their lives keeping and maintaining their own households. They, too, wish to know how to do work right.

These descriptions are drawn from authoritative sources, mostly by special permission. Some of these sources are governmental, some personal, but all were written by persons who had young people in mind, and who are experienced in directing them.

A companion booklet to this, entitled, "Money-Making and Thrift for Boys and Girls," gives suggestions about manufacturing things to sell, taking orders and contracts, selling periodicals, etc., and accounting for and saving money.

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HOW TO DO HOME WORK RIGHT

I

WORK ON THE GARDEN OR FARM

HOW TO MAKE A GARDEN

Planning the Garden.—Before the actual gardening is begun, a well-drawn plan should be made by each boy and girl. Draw your plan to a scale—that is, let ¼ inch on the paper represent 1 foot in the garden. Using this scale on a garden 25 by 50 feet, we shall have a drawing that will be 6¼ by 12½ inches.

With this same unit of measure represent the rows as they should be made, always remembering that for each foot in the garden you will use one-fourth of an inch on the paper. Consult the tables, pages 13 and 14, for the space between the rows of vegetables as well as for distances apart of the plants in the rows.

In planning a garden it is very important that vegetables of a tall habit of growth should be so placed that they will not shade the vegetables having a low habit of growth. This will give all the plants some sunlight.

Seeds.—After the plan is drawn on paper the young gardener must decide how much seed will be needed. The planting-table will help in this. It has a list, or column, of the amount of seed required for 100 lineal feet. If the row in the garden is only 50 feet long, the seed required will be one-half the amount named in the table. It is always best to order more seed than is actually required.

When the quantity of seed is known it should be ordered from a reliable seed house. Consult a neighbor who has a successful garden.

Testing Seed.—Choose ten average seeds of one variety. Provide a box eighteen inches long, twelve inches wide, and at least two inches deep, and fill it with good garden soil. Make shallow lines in the soil one inch apart, of a depth of about two to four times the diameter of the seed to be planted; place the ten seeds that you have chosen in the first of these shallow marks or furrows. Mark the box at the end of the row on the wood, so that you will know the variety of seed that is planted in that row. Choose ten more seeds of another variety and plant them in the second row. Continue in this way until all the varieties of seed bought have ten samples planted in the box. Cover the seed and the rows with soil and press the soil firmly with the palms of your hands. Sprinkle about a pint of water over the soil and place the box near the stove or in a sunny window where it will have a fair amount of heat. Water the soil during the next two weeks. Mark on paper the date of planting the seed, and each day record the number of plants that show above the soil. If at the end of two weeks nine of the ten seeds in the row have shown above the ground and are still healthy and green, the percentage of growth will be ninety; if eight, eighty; if six, sixty. If the test shows less than sixty per cent., more seed will have to be used in the actual planting of the garden in order to obtain the number of plants desired.

The above is the most valuable test of seeds, as it shows not only those seeds that will sprout well, but also those that under fair conditions will grow in the garden. Seeds that show a high percentage in this test will be profitable to plant.

Location.—If father or mother will give you your choice of a place for your garden, choose a piece of land

that has been under cultivation for two or three years. If this land slopes slightly toward the south and is a loamy, not clayey, soil, it will answer your purpose. If the land is near the hen-yard it will be well to fence the garden or to plan to keep the hens in their yard.

GARDEN PLAN

Nasturtiums (border)

Carrots

Carrots

Carrots

Carrots

Beets

Beets

Onions

Onions

Onions

Radishes

Radishes

Lettuce

Lettuce

Lettuce

Parsley (border)

Distance between rows:—

Length of rows—16½ feet.

Nasturtiums to first row of carrots—27 inches.

Each row from carrots to last row of beets—18 inches

Each row from last row of beets to parsley—9 inches

NOTE.—This is the first planting. Follow this in rotation to suit locality. Seek information from your State experiment station and college of agriculture.

Staking the Garden.—With pieces of wood stake out the garden corners on the land to be used. These stakes will serve to show you where to spread manure, or where to plow, spade, or harrow.

Manuring.—If good, well-rotted stable manure is available, spread a generous coating of it on the garden. It is doubtful whether too much can be applied. Some of the best gardeners use as much as three or four inches of well-rotted manure spread over the land.

Plowing or Spading.—If the ground is plowed it should be done after the manure is spread, and should be to a depth of six or eight inches. It is better, however, to use a spade or a spading fork. Such a tool will turn the soil to a greater depth than will the plow, and if employed by a boy who will use his head as well as his hands in his work the manure can be placed at a very good depth.

Smoothing.—Harrowing can follow the plowing, and fine smoothing can be done after that. If horse power is not used the hand rake will be the most serviceable tool. The rake can be used for breaking all lumps, as well as for leaving the soil level and smooth.

Permanent Staking.—After raking, permanent stakes can be driven at the corners of the garden in place of the temporary stakes first used. A nail should be driven in the top of the southeast corner stake and exact measurements from this stake to the other stakes should be made, placing nails in the tops of the other stakes where they are found by measurement to be needed. The use of these nails will help greatly in future exact measurements for planting.

Planting.—The time for planting as given in the planting-table must be used with common sense and varied to suit the conditions of weather and other local factors of the great outdoors It is intended to serve merely as a

guide. The young gardener should ask advice of the most successful grower of vegetables in his neighborhood.

In planting seed the rows in the garden should correspond to the rows as planned on the paper. Measurements from the nearest stakes at both ends of the rows should be taken. A garden line or some other means should be used for keeping the rows straight.

The table given on page 13 will serve as a guide in planting the seed, but no one can be taught gardening from a printed page. Consult your parents, your teacher, your district superintendent, and any successful gardener. Good advice at first hand will be valuable.

A furrow should be opened to the required depth with a hoe, which, as above said, should be guided by a line, or mark. The seed should be spread along the bottom of this furrow, then dirt should be filled in over the seed and pressed down by walking on it.

If there is a planting machine on the farm, such as a Planet Jr., Iron Age, Columbia, or the like, it may be used for planting.

Transplanting.—If tomatoes or other plants are raised in a hotbed, cold-frame, or seed bed, they should be removed with the largest amount of root surface possible and placed in the garden in the straight row planned for them, at the proper distance apart, in the following manner: With a trowel dig a hole larger than the plant roots need; fine the earth; set the roots of the plant slightly deeper in this fine earth than they grew; cover them with dirt; press hard; fill in more dirt, pressing now and then, until the level of the soil is reached. The plant will then be transplanted in such a way that it will have the best opportunity to grow.

Thinning.—If the plants come up too thickly they should he thinned according to directions given in the table under the heading "Distance apart of plants in row."

This is necessary in order to give the remaining plants the space that they require for the best growth.

Cultivating.—There are two things necessary for good cultivation—keep them in mind: first, absence of weeds; second, the surface soil should be loose at all times. This can easily be done with the hand, the hoe, and the rake. Pull out the weeds, hoe around the plant, rake after hoeing.

Watering.—If the season is exceptionally dry, water may be necessary for success in obtaining good growth. The hose, watering-can, or pails can be used. However, good culture from the beginning is the most important factor in maintaining the water supply.

Insects and Diseases.—Insects can be controlled somewhat by hand-picking. Diseases may be controlled by keeping the plants in a thrifty, continuously-growing condition, by giving good culture, by watering, and by adding manure dissolved in water much diluted.

CARING FOR FARM TOOLS

Tools should be thoroughly cleaned after using and should be kept oiled. This is especially true when a tool like a plow is put away and left for some time without use. Unless it is thoroughly oiled it will be sure to rust. All steel tools are better for a coat of oil, but this is essential to a a very bright tool with a cutting edge.

All edge tools should be kept sharp. Stopping work to sharpen a dull tool is nearly always economy. Almost the first thing a boy should learn in the handling of edge tools is how to keep them sharp and in good condition for work.

KEEPING UP THE PLACE

1. Clean up old machinery, boards, and the like, in the yard.

2. Pile all the lumber that is worth saving in one place.

PLANTING TABLE FOR VEGETABLES

Kind of vegetable	Seeds required for 100 feet of row	Distance apart of (hand cultivation)	Distance apart of plants in row	Depth to plant seed	Time to plant in open ground
Beans, bush, green	1 pt.	18 in.	5 to 8 plants per ft.	¾ in.	May to July
Beans, bush, wax	1 pt.	18 in.	5 to 8 plants per ft.	¾ in.	May to July
Beets	2 oz.	12 to 15 in.	5 to 6 plants per ft.	½ to ¾ in.	April to August
Cabbage, late	¼ oz.	24 in.	24 in.	½ in.	May to June
Carrots	1 oz.	12 in.	6 to 7 plants per ft.	½ in.	May to June
Corn, sweet	½ pt.	30 in.	Hills, 24 in.	1 in.	May to June
Cucumbers	½ oz.	4 ft.	Hills, 4 ft.	1 in.	May to July
Lettuce	½ oz.	12 to 15 in.	10 to 12 in.	½ in.	April to September
Onion seed	1 oz.	12 in.	4 to 5 plants per ft.	½ to ¾ in.	April to May
Onion sets	1 qt.	12 in.	4 to 5 plants per ft.	1 to 1½ in.	April to May
Parsnips	½ oz.	15 to 18 in.	5 to 6 plants per ft.	½ to ¾ in.	April to May
Peppers	⅛ oz.	18 in.	15 in.	½ in.	May to June
Pumpkins	½ oz.	8 it.	Hills, 10 ft.	1 in.	May to July
Radishes	1 oz.	12 in.	10 to 12 plants per ft.	½ in.	March to September
Spinach	1 oz.	12 in.	6 to 7 plants per ft.	1 in.	Early in spring or in August
Squash, bush	½ oz.	3 ft.	Hills, 3 ft.	1 in.	April to June
Squash, late	½ oz.	8 ft.	Hills, 8 ft.	1 in.	April to June
Tomatoes	⅛ oz.	3 ft.	3 ft.	½ to ¾ in.	May to June
Turnips, early	½ oz.	18 in.	6 to 7 plants per ft.	¼ to ½ in.	April to July
Turnips, rutabaga	¼ oz.	18 in.	3 to 4 plants per ft.	½ to ¾ in.	May to June
Watermelons	1 oz.	8 ft.	Hills, 8 ft.	1 in.	May to June

PLANTING TABLE FOR FLOWERS

Variety	Amount of seed for 10 feet of row	Depth to plant seed	Distance apart of rows	Distance apart of plants in row	Time to plant		Height of plant when well grown	Color of flowers
					Indoors	In open ground		
Ageratum	1 pkg.	¼ to ½ in.	12 in.	6 in.	March	May	6 to 9 in.	Blue
Alyssum	1 pkg.	¼ to ½ in.	12 in.	6 in.	.....	May	3 to 6 in.	White
Aster	1 pkg.	½ to ¾ in.	12 in.	9 to 12 in.	March	May	12 to 36 in.	White
Balsam	1 pkg.	½ to ¾ in.	24 in.	24 in,	April	May	24 to 30 in.	Pink
Candytuft	1 pkg.	¼ to ½ in.	12 in.	4 to 6 in.	April	May	6 to 10 in.	White
Cockscomb, low	1 pkg.	¼ to ½ in.	18 in.	12 in.	April	May	12 to 18 in.	Red
Cockscomb, tall	1 pkg.	¼ to ½ in.	24 in.	24 in.	April	May	36 in.	Red
Larkspur, annual	1 pkg.	¼ to ½ in.	12 in.	12 in.	March	May	12 to 18 in.	Blue
Marigold	1 pkg.	¼ to ½ in.	12 in.	6 in.	April	May	6 to 24 in.	Yellow
Mignonette	1 pkg.	¼ to ½ in.	12 in.	12 in.	March	May	12 to 18 in.	Greenish yellow
Nasturtium	1 pkg.	½ to ¾ in.	12 in.	12 in.	.....	May	9 to 12 in.	Red, orange
Pansy	1 pkg.	¼ to ½ in.	12 in.	6 in.	March	April	4 in.	Various
Phlox	1 pkg.	¼ io ½ in.	18 in.	12 in.	March	May	12 in.	Red
Salvia	1 pkg.	¼ to ½ in.	24 in.	18 in.	March	May	24 to 36 in.	Scarlet
Snapdragon	1 pkg.	¼ to ½ in.	12 in.	12 in.	March	May	12 to 36 in.	Yellow
Stock	1 pkg.	¼ to ½ in.	18 in.	12 in.	March	May	12 to 18 in.	Scarlet
Sweet William	1 pkg.	¼ to ½ in.	12 in.	6 in.	March	June	18 to 24 in.	Pink
Verbena	1 pkg.	¼ to ½ in.	18 in.	18 in.	March	May	6 to 8 in.	Blue
Zinnia	1 pkg.	¼ to ½ in.	12 in.	12 in.	April	May	12 to 24 in.	Red

3. Pile all the lumber and rubbish that is good for firewood only in one place.

4. Cut out the dead limbs in the trees in the yard, but do not prune the trees too severely.

5. Fix up the leaky eave troughs.

6. Fix all the door latches in the house so that they will work easily. If the doors stick so that they will not open, fix them.

7. Fix up the door steps.

8. Arrange the garden so that all work can be done with horses.

9. Plant a few flowers or shrubs from the woods in the yard. Put them in groups, but not in the center of the lawn, which should be kept clear so that it will be easy to mow and will look better.

II

WORK IN THE BARN OR GARAGE

HOW TO RUN AN AUTOMOBILE

The following is taken, by permission, from S. A. Moffat's "Boy Scout Tests and How to Pass Them," published by the Boy Scouts of America, New York:

Stopping a motor properly is one of the greatest helps to starting. If there is no dash carbureter adjustment and no gas primer, the throttle should be opened about one-third as the ignition is cut off. This allows a good mixture to enter and remain in the cylinders. The same course should be followed if there is a primer, except that the throttle may well be opened wide as the motor dies, to be sure that the cylinders are well filled. Then in priming with gas for starting, a good mixture may be obtained. If there is a good carbureter air lever on the dash, it should be moved toward "gas" as the motor stops, to leave a rich mixture in the cylinders; in cold weather this lever should be moved all the way over, in warm weather not so far.

Hand brake set; gears in neutral; spark full retarded. These three three-word phrases will, if followed, prevent most motor starting accidents. Of course under normal conditions the hand brake is set and the gears put in neutral when the motor is stopped, but these control levers may be tampered with by others, so that it is always well to note that all three of these things are right before attempting to start the motor.

If a four- or a six-cylinder motor is stopped with a combustible charge of gas in the cylinders, it will often

start by simply throwing the ignition switch to the battery side, generally indicated by "B" or "Bat." The exceptions in this may be, first, when the four-cylinder motor stops on dead center; that is, when the cranks are straight up and down, so that an explosion in the cylinder operates straight against the main bearings and fails to move the crank shaft, which seldom occurs, and generally only with a stiff motor; and second, when a motor stops so that a spark cannot be obtained when the switch is thrown to battery. Most distributors are now made so that a spark is obtained in any position of the motor; therefore the latter exception seldom applies.

If the motor does not thus start "on the spark," "cranking" must be resorted to. Presuming for the moment that the motor is not equipped with an electric, air or other cranking device, the operator should, before cranking, see that the hand brake is set, the gears in neutral, and the spark fully retarded. Then he should move the ignition switch to battery, open the throttle about one-third, and move the dash carbureter adjustment well over to "gas"—all the way over in cold weather. If not familiar with the particular motor, it is advisable to "turn the motor over" once or twice with the switch in neutral position to draw a charge into the cylinders, and then start, "on the spark." This eliminates all danger from "back kick," and when the motor starts the operator is at the switch, so that he can immediately throw it to the magneto side (marked "M" or "Mag") and close the throttle to prevent the motor racing. The carbureter air valve may then be adjusted until the motor idles properly, and is ready for its work.

Many cars are now equipped with gas priming devices, by which acetylene gas is forced into cylinders, where it mixes with the air therein and forms a combustible mixture for starting on the spark. The correct proportions of air and gas are not always obtainable by this

means, so that a start does not always result. However, the gas is of great assistance to starting in cold weather, when it is almost impossible to get the poor grade of gasoline which is now being used, to vaporize sufficiently to explode in the cold cylinders.

With an electric, air or other cranking devices on the car, the starting operations are the same, except that the cranking is done by the auxiliary or air motor, which is usually set in operation by means of a foot lever or button.

With the demountable rims so generally in use to-day, a puncture requires only the jacking up of the axle, the loosening of a few bolts, the substitution of another rim with a fully inflated tire therein, and putting away the tools and crippled tire. Care should be exercised in jacking up, to be sure that the jack is placed so that the car will not roll off it during the rim changing operation. All nuts and bolts should be well tightened, as the security of rims and wheels and all running gear parts is of the utmost importance. Only the tools required for the tire change (and usually these are only the jack, a bit stock and pliers) should be removed from the tool box, and all should be carefully returned to their places.

When it is necessary to replace an inner tube, the outer casing must be removed from the rim. The operation is facilitated by various types of detachable rims, each of which has its special tools and directions.

To remove and replace, "quick detachable" tires require no special instruction, but the job does sometimes call for both muscle and perseverance. A strong screwdriver is the only tool required for taking off the locking rim, but a special tire tube, a couple of pairs of pliers, and a hammer are necessary in puting the tire back on. Hold the locking rim to the rim proper with the pliers as it is hammered into place, otherwise it may not spring on properly.

Tires should be pumped up very hard, particularly the larger heavy car type, and it is better to have them too hard than too soft.

THE CARE OF A HORSE

Part of this is taken, by permission, from Emily Holt's "The Complete Housekeeper," published by Doubleday, Page & Co., Garden City, New York.

The care of a horse is very simple. He needs to be curried whenever he has been driven or ridden to a sweat, brushed afterward, then well rubbed down. Standing in stall he should be brushed every day, and curried twice a week. At all times he ought to be well bedded, with clean dry litter, either leaves, light straw, or fine soft shavings. Coarse damp litter is unwholesome. The bedding ought to be renewed every seven or ten days. Throw the old bedding in the compost heap, which is a necessary adjunct to even the smallest stable. Clean the stall daily. Take up the bedding upon a two-tined fork, shake all manure out of it, and throw it in a compact heap at the back of the stall. Shovel up the droppings, then sweep the floor well with a hickory broom, first sprinkling it well with either copperas-water or dilute carbolic acid. Monthly scour the manger and drinking-trough with hot carbolic soap-suds. A stall thus kept will be almost odorless, and wholly sanitary.

A horse that comes in reeking hot should not stand still to cool. Instead, walk him about, gradually slackening speed. Never feed a horse until thoroughly cooled, nor give him more than a swallow of water when he comes thirsty to the trough. Let the swallow be a full one; then pull up his head, and make him wait a minute or two. Thus he is saved from a host of stomach ills. Feed with sound whole grain, either corn or oats. Oats and bright hay, or sound corn-fodder, make up an ideal ration. Give only what grain will be eaten clean.

With a hard drive in prospect, give extra feed a day or two beforehand, but a sparing meal when on the point of setting out. Water after the morning feed, and before and after the mid-day one. If the grain is ground, it is better either made into mashes, by mixing with hot water and a little salt, or sprinkled over well-cut hay that has been made fairly damp.

HOW TO FEED A HORSE.

The foods given to a horse vary according to the locality. In the Northern States, Indian corn or oats constitute the grain part of the meal, while corn-stalks or timothy hay constitutes the coarse part of the fodder. In the South, Indian corn is the common grain, and dry corn-stalks the coarse material. On the Pacific Coast, barley is the grain, and wild oats, or the barley and wheat plants, the coarse material. Wheat-bran is also a very good food, and should never be dispensed with in feeding the horse, especially the driving horse, which is likely not to be regularly driven. There is nothing better to feed a horse than good sound oats, Indian corn, and wheat-bran for the grain part of the meal; nor is there anything better than good sweet timothy, or mixed timothy and clover hay, free from dust, for the coarse part of the ration.

The number of pounds to be fed per day cannot be stated with exactness. That will depend on the kind of food, as well as the size of the horse and the kind of work he is called on to do. We may say that a horse of the average size doing light work will consume 20 pounds of dry matter, water free; one doing medium work, 24 pounds; and one heavy work 26 pounds per day of dry matter, of which one-half to two-thirds should be grain, the remainder coarse fodder. The proportion of grain that should be fed depends on the kind or work the animal is doing. When the horse is at hard work,

the grain should be increased and the hay diminished; when he is idle, the hay should be increased and the grain diminished.

The portion of the day's allowance that should be fed at each meal can be stated with more exactness than the amount. The animal should be fed three times per day, having one-quarter of the day's allowance at least one hour before going to work in the morning. When the morning's task is over, he should be watered, then fed another quarter of his allowance, and watered again on the way to work. When the day's work is done, he should be watered, then fed the remainder of the food, which will be one-half of his day's allowance. The reason for the large meal at night is that he now has ample time to masticate and digest his food. He should be unharnessed at once, and when the sweat has dried, be given a thorough brushing. A horse cared for in this way will come from the stable full of vim and energy and ready to attempt any task he may be called on to do.

HOW TO HARNESS A HORSE

Under reflection it is apparent that harnesses are used for two purposes: first, to enable the driver to control the horse; second, to enable the horse to control the load, to move it forward and backward. To control the horse the driver must gain command of the head, and this is best accomplished by the mouth, since it is well forward and tender. That the mouth is tender and easily made sore by poorly-fitting bridles must not be forgotten, as many gentle horses are rendered unsafe by spoiling the mouth with a cruel, ill-fitting bridle. Hence, much care must be taken in properly adjusting the bridle.

To enable the horse to control the load the driver must attach the animal to the load in such a manner as to give the horse perfect control over himself. This is best accomplished by attaching the shoulders of the horse to

the load; and to do this collars, hames, and traces have been devised. Since the compression between the collar and shoulder is great, much attention must be given these parts or they will become sore also. To enable the horse to back the load, the breaching and hold-back have been devised.

In adjusting the harness we must remember that there are four places likely to show abrasion and become sore. Poorly-fitting bridles and severe bits cause sore mouths; poorly-fitting collars cause sore shoulders; poorly-fitting saddles, where there is much backing, cause sore backs; and poorly-fitting cruppers cause sore tails. Sores thus produced give the horse much pain and are likely to become a source of viciousness. A sore mouth often provokes a horse to run away; sore shoulders and sore back often provoke balking; and a sore tail often provokes kicking.

Choosing and Fitting the Bridle.—In the choice of the bridle the bit is first to be considered. Bits of many types have been devised to meet the various and peculiar habits of the horse. For most animals a good-sized bit cannot be improved upon. Care should be taken to see that it is of the proper length to fit the animal's mouth. After the bit has been decided upon, note the adjustment of the bridle. Sometimes the head-stall is so short as to draw the bit upwards into the angles of the mouth; it thus annoys the horse and may produce sore mouth. Then, again, often the bridle-stall is too large, allowing the bit to drop. In such a case the horse becomes unmindful of the driver's wish. After the adjustment of the bridle there come the blinds. There is much discussion as to the wisdom of using blinds on bridles. Some horses work best with them; others do better service without them.

Fitting the Collar.—The fitting of the collar is not only of much importance, but also a rather difficult task. The

collar is very stiff and firm and slow to adjust itself to the shoulders. A good way to adjust the collar is to follows: Select the most perfect fitting collar available, place in three inches of water, and let it remain over night. In the morning put the collar on the horse and work moderately through the day. After being soaked in this way the collar will adjust itself to every inequality of the shoulder and the horse will seldom be troubled with soreness.

Fitting the Crupper.—The crupper is a frequent source of sore tail, and a horse with a sore tail is often difficult to manage. This soreness is often caused by the back-strap being too short, thus drawing the crupper up tight against the tail, which soon becomes abraded. To avoid this, see that the back-strap is of the proper length, in which case there will be little likelihood of the tail being made sore.

Always handle your horses gently. Always speak to them before you go into the stall. Do not throw the harness on them, as they do not enjoy being hurt. Always be sure that all buckles are fastened and that the ends of the straps are put into the keepers. In hitching a horse or a team to a vehicle, the traces should be the last things fastened, the lines being taken down first, so that the animals are always under control.

In unhitching, exactly the reverse process is followed, the lines being the last part of the harness to be put up.

In unharnessing a team, the buckles should always be loosened on the left-hand side.

OILING AND MENDING HARNESS

Before a harness is oiled it should be thoroughly cleaned of all foreign substance by scraping off accumulated dirt with a dull knife and then by washing with castile soap or regular harness soap. It should then be hung up to dry, but not in the sunlight. When it is thor-

oughly dry, it should be inspected to find where it needs mending. Every break and every place that shows any sign of giving way should be repaired. When the repairing is in the line of sewing, this should be done with a waxed thread, but when it is impossible, mending may be done by using copper rivets, which are readily obtainable at every general or hardware store. In using these rivets, care should be taken to punch in the leather as large a hole as may be necessary to receive the rivet, and no larger.

After the mending has been done, the harness should be gone over thoroughly with a good harness oil, care being taken not to apply more than the leather will readily absorb. The harness should then be hung to dry in the shade, and, after the oil has disappeared, should be gone over with a cloth. In hot climates a harness soap is better than an oil.

HOW TO DRIVE A HORSE

A horse is very much a creature of habit, and he is quite likely to do again whatever, good or bad, he has been allowed to do once. For that reason, he should never be permitted to form any bad habits.

For example, the first time the horse is tied by the head, see to it that he is fastened securely and that the halter will hold in case he pulls. If the horse pulls and fails to free himself in the first few attempts there is little likelihood of his trying it later, while if he succeeds in freeing himself at first he will never cease trying to repeat what he once accomplished. On the other hand, it is very important not to overload the horse that is being trained, with a view of creating in him the notion that he can pull anything. Thus to promote the horse's usefulness we exaggerate his appreciation of those powers that are useful to man, and deceive him as to certain others which are not useful, and perhaps positively dangerous.

A horse should be trained to stand still while being harnessed and hitched, and until the word to start is given. If this training is long delayed it will be very hard to give.

A horse should never be trusted more than is necessary. Many distressing accidents occur from this cause. A good horseman never runs risks when they can be avoided.

In harnessing, saddling, or handling a horse the work should always be done from the left side. The harness should be gently but firmly placed upon the animal. The harness and other equipment should be of good quality and in good repair.

In hitching a horse into a pair of shafts, the shafts should always be raised and the animal backed into them or the vehicle drawn forward, as the horse is likely to step on a shaft and break it if backed in while the shafts are on the ground.

In hitching, the horse should be fastened into the bits and the lines placed where they can be easily reached before hitching to the vehicle. In unhitching, the lines should be the last disengaged and care should be taken that the animal is free from the vehicle before he is led away.

A horse should be tied by a strong rope or strap about the neck, the strap passed through the ring of the bit and then to the post. A horse should always be tied short, otherwise he may get his foot over the tie-strap, be unable to disengage it, break the tie-strap or check rein, become frightened, and an accident result.

In working a horse few signals should be used. These should be used to mean exactly the same thing at all times. Signals or commands should be given gently but firmly, and should always be carried out.

Whoa should always mean to stop and nothing else; it should not mean to go slowly or steadily, or even to get ready to stop.

Steady should be used when it is desired to have the horse go slowly or steadily.

Back should always mean to move backwards and it should not mean to stop.

Get up should always mean to move forward in case the animal is hitched.

These four commands are sufficient for the animal at work. They should be spoken clearly and distinctly and never combined, such as *whoa-back*, which is often used in the place of *whoa*.

It may be added that not all men are fitted to train horses; in fact, not all horse lovers are good horse trainers. There is a particular adaptation possessed by those unfamiliar as well as by those familiar with the horse. A man possessing this particular adaptation, though unfamiliar with the horse, will in a very short time, if given the opportunity, make a better trainer than the man who is familiar with the horse but lacking the special adaptation.

POULTRY KEEPING

The Boy Scouts of America has given permission for the use of part of this article, from S. A. Moffat's "Boy Scout Tests and How to Pass Them."

In this article, we will begin with the simplest subject first and make our work progressive. Those who are embarking in the poultry business should begin with a pen of layers. These can be purchased in the fall of the year. In learning to keep poultry it is best to begin with small numbers, as the greater the number of birds kept together the greater the tendency is for complications in the way of diseases and troubles in the management.

A pen of 6, 12 or 25 is a good unit. A suitable house should be built to accommodate whatever number one choses to start with. A pen of 6 females should have from 7 to 8 square feet of floor space for each bird. A

pen of 12 from 6 to 7 square feet and one of 25 from 5 to 6 square feet each. As can be readily seen, the larger the house the more square feet of floor space each bird has to roam over, therefore, as the size of the flock increases the number of square feet per layer can be slightly decreased. In numbers from 50 to 100 each bird should have from 4½ to 5 square feet of floor space.

A small house 8 x 10 feet, of the shed-roof type, makes a good one for 12 females. The floor, whether of wood, earth or cement, should have three or four inches of good, coarse sand spread over it as a foundation for litter. There is no better litter than sand, although it can be improved by placing a little straw, leaves or corn stalks on top. I would not use anything as fine as chaff, shavings or saw-dust, as these mix too readily with the sand. The litter should be light enough to remain on top. Besides making a good litter, the sand is a good place for the hens to roll and rid themselves of lice.

To be a good mother, a bird should be of medium size, good constitution and faithful, quiet nature. Above all, she should not be fussy, as this type of hen breaks eggs and tramples chicks. Test every hen by letting her sit on spoiled eggs for a few days. If she is in earnest, you can trust her with eleven to fifteen eggs. When the eggs are given her, she should be treated to a good dusting with a reliable insect powder and again in a few days before hatching time. The nest should give the hen room to change her position, but if too large the eggs may become chilled or broken. "Fuss" with your hens as little as possible, though the nest should be properly cleaned if an egg should chance to get broken. If possible have food and water near the nest and perhaps a box of dust.

Method of Feeding.—In a house that accommodates 12 hens it will be understood that the amounts mentioned

here will be for that number, and those who have 6 hens can feed one-half as much and those with 25 about double the amount, etc.

In feeding layers the object is to get as many eggs from them as possible; therefore, a forcing system of feeding can be used. A dry mash can be kept in a hopper before the hens at all times. A good mash for this purpose is as follows (by weight):

1 part wheat bran
1 part corn meal
1 part beef scrap
1 part wheat middlings
1 part finely-ground oats
1 part oil meal
1 part gluten feed

A good scratch feed can be made from 2 parts cracked corn and 1 part wheat; or, if corn is extremely high in price, 1 part cracked corn and 1 of wheat. If oats are cheap, 1 part of oats (heavy), 1 of cracked corn and 1 of wheat can be fed mornings. The method in general is as follows: Keep one of the dry mashes before the hens all the time. In addition, feed a wet mash once a day. It is made by moistening a small quantity of the dry mash you are using, with either water or milk. Use the latter if you have it. Take only enough of the water or milk to make the mash crumbly. Don't have it thin or sloppy. This can be fed in the morning, at noon or night, according to your convenience. Do not give them more than they will eat in a few moments. You will soon learn just about how much they will clean up in 12 or 15 minutes. A quart will be about the right amount. If you feed many table scraps, cut down the amount of wet mash. Feed any one of the grain mixtures night and morning in the litter. It should be fed in the winter from 3.30 to 4.00 P.M., in the summer from 5.00 to 6.00 P.M., and in the morning feed before you go to school. At night give all the grain they will eat and enough more so they will have something to work on early in the morning. About 1 to 1½ quarts will be

plenty. Of course the exact amount will depend upon the number of eggs they lay, the amount of wet mash fed, and the time of feeding it. In the morning, give them enough of the scratch feed to keep them working all day. Keep fresh water before the hens, and if they show any signs of colds, buy a little potassium permanganate and put a few crystals in the drinking water, just enough to give it a good red color. This is a disinfectant and will kill the germs that fall into it from the hens' noses when they drink. As this is a poison, when given in quantities, it should be kept away from small children. In hot weather give fresh water at noon as well as mornings. Keep grit and oyster shell constantly before them. Give green or succulent feed once a day or every second day. Cabbage can be hung up, and beets and mangles can be split open and laid on the floor for them to pick. In the summer, green materials mentioned above can be fed.

Gentleness.—There is probably no animal on the farm that responds so readily to kind treatment as the hen. If she is frightened by catching, or by dogs, or other animals, she is apt to stop laying and may injure herself by jumping against corners of boxes or other projections. It is therefore necessary to be as gentle as possible with your hens. Make pets of them. The time spent in peting them should not be included with labor. At the same time, it will add somewhat to your profits. I like to see a girl or boy proud of his flock and anxious to show it to his friends, but it is not always advisable to allow your friends to enter the coop, especially if the hens are at all wild. Better observe them from a distance and not interfere with their laying. Of course, if the hens are tame, it will not make so much difference.

After one has had practice in feeding and managing layers the next step is learning to grow chicks. A few chicks 7 or 8 weeks of age can be purchased and grown

through the season to maturity. A small colony house, or coop, can be used for this purpose. It is essential that such a coop be well ventilated, kept scrupulously clean, and in the fall of the year when the cold rains come on they should be well protected and kept out of drafts.

If possible they should be grown on a range where they can have plenty of range and shade. This insures health and rapid growth. Dry mash and cracked corn can be kept in hoppers before the birds when grown in this way. If they are grown on limited range or in small pens this is not advisable, but the dry mash may be kept before them the same as on the range and they can be fed their cracked corn and wheat night and morning about the way the hens are fed. The soil in the yard should be spaded at least once a week, and green feed should be given them in abundance every day.

House Management.—The door of the house should be kept closed during cold weather, or a draft will be caused by the wind blowing in on to the hens or by its coming in at the door and out at the opening in the front. On warm days in winter, both the door and screen may be opened. The cloth screen should be kept open except during extremely cold nights and very stormy or windy days. This will depend somewhat upon the protection your house has from the cold winds. If you place ventilators in the rear, keep them closed in winter and open in summer.

HOW TO USE SOME COMMON TOOLS

SOME HINTS ON SAWING.

When sawing, the utmost care must be exercised to avoid the use of any willful force in driving the saw, The action should be even and regular, with an easy, steady motion. Any violence or undue exertion will

either cause the saw to snap, or will buckle it up and render it useless for further work.

When using the tendon saw, mark the wood with a sharp knife, instead of with a pencil. This is known as making a "striking line," and, as it produces a narrow and more exact line than a pencil, a neater cut is ensured.

As a general rule, it may be remarked that in all sawn joints, such as the housing joints, the saw is worked inside the striking line on the one piece of wood, and outside on the other.

PLANES AND PLANING

There is a certain knack required in holding a plane which has much to do with success in turning out good work. When you use your plane do not stand over it, but quite well to the back of it, so as to give it your best and guided strength, your arm not out too far, either, and then when you pull the plane back to take off another shaving, do not drag it flat over the wood, because you know that in doing so will take the edge off the iron more than is necessary. Either lift the plane off the wood entirely or bring it back tilting it on its lower edge.

To ascertain whether the surface of a small piece of wood has been planed evenly, the wood should be held level with the eye, the iron of the set-square placed across it and passed from end to end. If any light appears between the metal and the wood, it proves an uneven surface.

Of course you do not use a hammer to drive screws. I am sure that when you do have to use a hammer you take hold of it well down on the handle and not up near the head in order to deliver a sure and effective blow.

HOW TO HOUSE THE DOG

It is no exaggeration to say that the dog stands first favorite amongst pets. His companionship, fun, fidel-

ity and other good qualities make him pre-eminent, and there is scarcely a boy who would not like to possess a desirable friend. Some practical information on the matter will therefore prove useful.

Whatever kind of dog you intend to have it is most necessary to consider how it is to be housed. All the talk about dogs being a nuisance is generally owing to their being badly accommodated, so make up your mind to give your pet a house such as he deserves. A very rudimentary knowledge of carpentry will enable you to make a good weather-proof kennel, but in many cases, a ready-made house can be purchased at little cost.

If it be decided to keep a toy dog, which will live indoors, all that is required is a simple box, about one foot high, and large enough for him to lie down in comfortably. A few pieces of boarding neatly nailed together will make a good receptacle.

THE KENNEL AND RUN.

A large dog should live outside the house, and will require a kennel made of half-inch boarding with a width of 18 in., a depth of 30 in., and a height of 24 in.—such a house should prove comfortable for a medium-sized dog. Let it rest above the ground on two pieces of wood to keep out the damp. Make the roof overlapping and sloping to carry off rain, and cut a hole about one foot wide in the front or side to admit the animal. It is well, also, to have a covered run to your dog's house. Put together a stout frame, so as to enclose the house in a width of at least three or four feet. Fasten to it a strong iron wire-netting, covered in with a sloping wood roof and containing a door. Before starting to make this kennel choose a dry, sheltered spot, and measure off exactly the space you intend to devote to it, and keep to these measurements when cutting material for the run. Several coats of paint should be given to preserve the woodwork.

III

WORK IN THE HOUSE

The following charming description in story form of

HOW TO START THE DAY IN THE HOME

is taken, by permission, from "Saturday Mornings," by Caroline French Benton, published by Dana Estes & Co., Boston.

It was hardly more than six o'clock in the morning when the little girl woke and jumped out of bed. She dressed softly, so that she should not wake any one, and took her bed to pieces, and set her closet door open, as she had learned in her bedroom lesson. She threw up the windows and hung up her night-dress, and then left the room, closing the door behind her.

Her mother met her in the hall, and they went down stairs together, tying on their clean gingham aprons as they went. The house was all shut up, of course, so they opened the front doors, raised the shades in the parlors, and opened the windows a little to change the air. In the kitchen the fire was burning, shut up as they had left it the night before, and they first closed it to shake it down, and then opened the drafts and put on fresh coal, as Margaret had learned when she studied about the range. While the fire was burning up she pinned a little shawl about her head and swept off the front steps and sidewalk, and came in all glowing from the fresh air.

By this time the fire was hot and bright, and the cereal was put on to cook in the double boiler, the kettle filled with fresh water and put on to boil for coffee. Her mother said she would stay out in the kitchen and

make muffins for breakfast while the other rooms were put in order, so Margaret went into the parlors and sitting-room and straightened the chairs, put away books and papers, and dusted here and there, leaving the regular dusting until later in the day. The windows were now shut, and the rooms looked very tidy, so she went to the dining-room to prepare that for breakfast.

She brushed up the crumbs, aired the room and put it in order. She arranged the doilies on the table, one under each plate, with a round of felt under that, laid the silver, put on her mother's tray with the cups and saucers, set the tumblers and napkins around, and the plates with the finger-bowls and fruit-knives, and the bread-and-butter plates with the spreaders. She filled the salts freshly, and last of all put on a vase of flowers. Then she took the cereal dishes, platter and plates out to heat in the oven.

She found her mother was getting ready the eggs and other things for breakfast, and she needed no help, so she carried into the dining-room the butter balls and put them around; filled the finger-bowls and tumblers with cold water and the coffee cups with hot; arranged the fruit on the sideboard, and put cream into the pitcher on the tray, as well as in another pitcher, for the cereal. By the time breakfast was ready she had on her white apron and had washed her hands, and when the family came down she was ready to show them all what a well-trained waitress she was.

"Do sit down with us," her father begged. "You have done so much already!" But Margaret felt a little proud that she knew her waiting lesson so well, and said she would rather not. She really enjoyed moving very quietly around the table, bringing in and taking out things, passing everything to the left, and laying down plates at the right, and generally remembering just what she had been taught.

After all had finished she ate her own breakfast, and found she had been up so long and worked so much that it tasted twice as good as usual. When she had finished she put on her gingham apron again and cleared the table. She took up the crumbs carefully and used the carpet-sweeper all over the rug. She scraped and piled the dishes in nice, neat piles, and, drawing the hot water, she washed and wiped them all nicely, and put them away. She swept the kitchen, wiped off the table, shut up the range and washed out the dish towels exactly as her grandmother had taught in the lesson she gave on the kitchen.

RULES FOR THE WORK PRECEDING AND FOLLOWING BREAKFAST

First, make a fire, put water into the kettle to boil, wash and dress.

Second, air the bed, placing the bedclothing across a chair; open the windows.

Third, air the dining room; even if cold, open the window a little.

Fourth, start cooking the breakfast.

Fifth, set the table.

Sixth, finish cooking and serve the breakfast.

Seventh, clear the table, pile dishes for washing, brush up under dining-room table, put water to boil for dish-washing later, if there is not hot water from the pipes.

Eighth, make the bed and dust and clean the bedroom.

Ninth, wash the dishes and put the kitchen in order.

HOW TO MAKE THE MORNING FIRE IN THE RANGE

First, take out the ashes, seeing that clinkers and fine ashes are removed from every part of the stove. These prevent a free circulation of air and absorb the heat. Lay the fire lightly—first paper, then wood, then a very little coal; remember that a packed fire will not

burn. Before lighting the fire the dust should be brushed from every part of the stove. When lighting the fire, have all draughts open, damper open, and check closed. Put very little, if any, coal on at first; and more coal when the fire is started. When it is going well, close the damper. The children, not the teacher, should decide when the damper should be closed.

During the day it is always better to rake a fire than to shake it. Never have the coal reach the lids of the stove, as this makes the lids crack. Never allow the stove to grow red-hot; to cool too hot a fire, open check or lift lids.

Before blacking the stove, rub off with a damp newspaper. The range should be blacked every morning before the fire is lighted, but never black over dust. Throughout the day clean the stove with newspaper if anything spills on it. If it is not thoroughly polished after blacking, the saucepans will become dirty.

Connected with a stove and near it, one must have a match box, a box for kindling, and a place for newspapers. A common packing box divided into two parts will hold both wood and paper. One must also have an ash can, a coal scuttle, and a shovel; a stove lifter, a shaker, a poker and rake for cleaning soot out from all air spaces under the oven as well as over it; a blacking dauber and brush, stove blacking, a whisk broom, and an old glove to protect the hands. An oven cloth should be near at hand for lifting hot dishes.—*From Practical Housekeeping, by Mabel Hyde Kittredge, published by The Century Co., New York.*

HOUSEWORK

Many of these simple and authoritative suggestions for doing housework are those that are being used in the Boys' and Girls' Home Economics Clubs of Massachusetts, for whom they were prepared by Miss Laura Comstock and Miss Ethel H. Nash.

TABLE SETTING

First lay on the table a silence cloth or some heavy cloth to protect the table. Then lay the table cloth, having the first center fold of the cloth lengthwise of the table. Have no wrinkles and be sure that the sides are even. Always try to have a plant, flower or fruit for the center of the table. Tray cloths may be placed at the head and foot of the table. Then put napkin, glass and silver set in place for each person, to constitute the "cover." The various parts of the cover are arranged as follows:

Knives—at right of plate, sharp side in.

Spoons—at right, outside the knife, bowls up.

Forks—at left, tines up.

Glass—at tip of knife.

Bread-and-butter plate, or indvidual butter—at tip of fork.

Napkin—at left of fork.

If there are two or more knives, forks or spoons to be used, set them beside the others of their kind, the smaller one outside, or if they are the same size, set the one to be used first outside. Set them close together and perpendicular with and about an inch from the edge of the table.

Cups and saucers should be arranged at the left of the hostess. If there are only a few, these may be arranged with each cup in its own saucer, with handles at the right. With a large number it is necessary to stack the cups and saucers. The sugar bowl and creamer may be placed in front of the hostess at the right. The coffee pot should be placed at the right of the hostess.

Salt and pepper shakers should be arranged at opposite corners of the table, or between every two persons. Platters and other dishes should be set where they will be convenient but not overcrowded. When set, the table should present an orderly appearance.

TABLE SERVING

The waitress should see that the table is adequately set before asking the guests to come to the table. Water glasses should be three-quarters full, butter on the bread-and-butter plates, chairs placed so that the straight line of the table cloth is not broken. All silver needed in serving not placed on the table at the beginning should be on a side table.

The waitress should see that glasses are kept filled during the entire meal. Butter should be supplied when necessary.

Pass all things to the left of the person seated, and hold server low enough so guest will have no difficulty in serving himself.

Place all plates and the like from the right of person sitting. Cups should be placed close to plate and handle a trifle to the right of the guest. Side dishes should be placed where they will crowd the least.

In the main courses the food should be placed on the table first and then the plates brought in. In removing a course, remove in the order in which they were placed, food first, then soiled plates. Stack dishes but very little in removing. Use a tray for this work.

The person at the right or left of the host, who ordinarily is a lady, should be served first. One may serve right around the table when six or more are seated, not necessarily serving all ladies first.

Crumbs should be removed immediately before the sweet or dessert course.

The waitress should be neat in appearance, move quickly and quietly, not talk, and be observing so that she may see what guests desire without their asking for it.

WASHING DISHES.

Collect dishes and put each kind by itself. Carefully scrape off crumbs and bits of left-overs from plates be-

fore wetting. Have plenty of hot soapy water. Wash glassware first, then the silver and china. Greasy dishes should be kept until last. Sticky dishes and cooking utensils should be soaked in cold water. Cooking utensils may be washed before the other dishes, provided the water is changed afterwards, or they may be washed last. Rinse all dishes with boiling hot water, taking care to rinse the inside as well as the outside.

Smoked sauce pans may be cleaned with sapolio rubbed on with a moistened cloth. If the contents of a dish have been burned on to the inside, this may be scoured off with sapolio or one tablespoon of washing soda may be added with one quart of cold water. Let this come to the boiling point and the burned part will come off easily.

Wooden, bone or ivory handles on knives should never be put into water. Clean steel knives with brick dust, emery powder or some commercial cleaner.

Tea and coffee pots should always be washed in clear water without soap.

Milk bottles and cans should be filled with cold water immediately upon emptying. Wash in clean soapy water and rinse in boiling hot water. Do not try to wipe the inside of bottle, but invert and let drain.

Moulding boards should be scraped with a dull knife and wiped off with a dry cloth. Wash with luke-warm water, using no soap, and scald with boiling hot water.

Wash out the dishpan and dish cloth. Dry dishpan to prevent rusting, and hang dish cloth where it will air and dry.

DRYING DISHES AND ARRANGING IN CUPBOARD

After dishes are thoroughly rinsed with boiling hot water, dry them with a clean cloth. Rinse dish wiper in hot water after each using and wash thoroughly once a day. Stack dishes, putting those of same pattern and

size together. Dishes should be arranged in an orderly manner in the cupboard. The glassware should be on a shelf by itself and dishes of similar kind and size should be grouped together. Cups may be hung on small hooks. Fine china and antique pieces should be kept separately and should not be crowded. Knives, forks and spoons should be kept in a drawer having separate compartments, or they may be kept in separate boxes.

Tin dishes and cooking utensils should be kept in a closet by themselves and should be systematically arranged.

SWEEPING AND DUSTING

Sweeping.—Move chairs and other furniture to one part of the room or into another room. Raise windows unless the breeze is so strong as to blow the dust around. Be sure no food is left uncovered in the room. Sweep from the edges of the room toward the center. Be careful to get corners clean. Sweep with short strokes with the direction of the boards, keeping the broom close to the floor. Make as little dirt as possible. Gather dust in a dust pan and burn. The kitchen should be swept at least twice a day. Other rooms may not need a thorough cleaning but once a week. A carpet sweeper is a help in the daily care of these rooms.

Dusting.—Use a soft cotton cloth and wipe dust from the woodwork, doors, window ledges, pictures and furniture. The dust cloth may be slightly dampened with kerosene or a good furniture polish. Never use a feather duster for dusting. Gather the dust into the cloth, folding it as you work. Shake it frequently out of the window, being careful that the dust does not blow back into the room. When the room has been dusted, wash the cloth and hang it to dry.

CARE OF ONE'S BEDROOM

Daily Care.—In the morning, open the windows. Throw the bed clothes over the foot of the bed. A chair may be placed at the foot of the bed to prevent bedding from touching the floor. Let air blow across bedding and mattress. Air night clothes.

Make the bed when the room and bedding have been thoroughly aired. First lay on a pad or a folded sheet to protect mattress. Put on the sheets, wide hem at the top, and wrong side up. The under one should be tightly tucked in all around. The upper one is tucked in only at the bottom. Put on blankets, having upper edges even, and tuck in tightly at bottom. Fold the upper sheet back over the blankets and tuck it and the blankets in at the side. Make square corners and have no wrinkles in the coverings. Lastly, put on spread and pillows.

Care should be taken in preparing the room for a guest at night. Fold the spread back across the foot of the bed. Turn back blankets and sheets neatly. Lay extra coverings over foot of bed. Bring in hot water for bathing purposes and cold water for drinking.

Weekly Care.—Once a week the bed should be changed. The clothes should all be removed from the bed, and the mattress turned, brushed and aired more thoroughly than usual. In making up the bed, follow directions given above, using the top sheet for the under one, with the fresh side uppermost.

The sweeping and dusting of room should be done according to directions in previous paragraph.

WASHING WINDOWS

Material Used.—To 1 quart of water use 1 teaspoonful washing soda; or to 1 quart of water use 2 teaspoonfuls ammonia; or to 1 quart of water use 1 teaspoonful alcohol; or to 1 quart of water use 1 teaspoonful kero-

sene; or water and soap, make a paste of whiting, with alcohol or water; or use one of the many commercial cleaners. Old lintless cloths or chamois or glass towels. Pail or basin. Skewer for corners. Newspapers on which to set pail and cleaning materials.

Method.—Dust frame and panes. Wash frames first if necessary to clean. Wash window first on inside then on outside. Wash one pane and dry it, then a second one, and so on until the entire window has been cleaned.

If a paste is used apply to window with soft cloth or sponge. Allow it to dry. Take a lintless cloth and wipe thoroughly.

CLEANING FLOOR

Always sweep a floor before washing or scrubbing it. Then look for grease spots and take them out in the following manner: Cover grease spots on wood or stone with flour, starch or powdered chalk. Take a knife and scrape off. Cold water poured upon grease as it is spilled will harden it. Use luke-warm water, a long-handled scrubbing brush, a mop and washing powder, or soft soap and sand, or sand soap. Scrub with the grain of the wood, doing a few square feet at a time. Dip the mop in clean water and wash the part that has been scrubbed. Use no more water than is needed. Wet the mop again, wring it as dry as possible and wipe the floor. Proceed in this way until the whole floor has been cleaned.

A floor covered with linoleum or oilcloth does not need scrubbing. Mop the floor with luke-warm water and milk, allowing one cup of skim milk to one gallon of water. Wipe dry. Be sure to keep water fairly clean.

CLEANING AND FILLING LAMPS

Collect all lamps that are to be cleaned. Place chimneys and globes on one table,—use another for the lamps proper. Fill the lamps not quite full with the oil. After burner has been carefully screwed on, turn up

wick slightly, take an old cloth and wipe off charred portion. See that the corners are rounded. If scissors are used, be sure to cut the wick straight across. Wipe off lamp with paper or old cloth. Wash in warm soapy water and wipe with a dry cloth. Chimneys and globes should be washed in hot soapy water and wiped with a dry lintless cloth. See that lamps are put back in places and all utensils are put away properly.

BUILDING FIRE

Open all dampers. Clean everything out of the fire box. Place crumpled paper over the bottom of the box, then lay on kindlings, crossing some pieces. Arrange a few sticks of heavier wood on top, being careful that the wood reaches to the corners of the fire box and is not all in the middle. Light fire from beneath. For a wood fire, continue adding wood. For a coal fire, sprinkle a little coal over the wood. When the coal is ignited, add more, gradually, until fire box is filled to within three-fourths inch of top. When the coal burns blue, close the pipe damper and adjust oven damper. The front damper should be closed or half closed when the coal is burning well.

BLACKING STOVE

Wipe the stove off with old newspapers. Scrape off anything that has been burned on and be sure that the oven is clean. Before lighting fire, apply the blacking, using very little and brushing it thoroughly over the stove. When stove is all blacked, light the fire and polish with a brush or coarse cloth. Polish the part of the stove first that will become warm soonest. Polish other parts until the whole stove shines. A loose glove worn during the process will protect the hands. The top of a stove may be kept in good condition without blacking, by washing frequently with warm soapy water.

ASSISTING WITH THE WASHING

Assistance may be given in wringing, bluing, starching, hanging up clothes, or removing them from the line. Some clothes, such as coarse towels and sheets, may be carefully folded when taken from the line and not ironed. A small manual called "Approved Methods of Home Laundering" may be obtained free of charge from the Proctor & Gamble Company, Cincinnati, Ohio.

HOW TO IRON

Houghton, Mifflin Co., Boston, have given permission for the use of this extract from Ada Wilson Trowbridge's "The Home School."

Cover the ironing-board with an old blanket or some other heavy material, and over this tack tightly and securely a clean ironing-sheet. It is better to use new material for the ironing-sheet, and it must be kept clean by frequent washing.

Have several folds of clean paper under the iron rest, and keep on hand a piece of beeswax for cleaning the iron, and a clean cloth on which to test the heat of the irons and on which to wipe them.

Use a piece of cloth to wash off all spots from the clothes, and to moisten them if they dry too fast.

When ironing large pieces, keep the clothes-basket under the ironing-board to protect the clothes from the floor, or spread papers under the ironing-board.

Use heavy irons for heavy materials, and light ones for light materials, and iron all articles until thoroughly dry.

As a rule, iron trimming and ruffles first, and the straight parts last, and stretch all parts of a garment into shape.

Iron embroidery on the wrong side to bring out the pattern, and gently stretch laces into shape.

Use as hot an iron as is possible without scorching the clothes.

Iron napkins and hand-towels on both sides.

When ironing tablecloths, make a lengthwise fold through the center and iron the cloth on both sides. Make a second lengthwise fold and press carefully. Do not press the cross-folds, but make them lightly with the hand.

Tablecloths and napkins that are old or made from linen that is very light in weight will look much better if starched a little.

HOW TO CLEAN A KITCHEN

The Century Co., New York, has granted permission for the use of this extract from Mabel Hyde Kittredge's "Practical Homemaking."

To Clean Kitchen.—First, dust and take from the room everything that can be moved. Do the stove cleaning next, as this is the dirtiest work. Then sweep the floor; cover a broom with a cloth and wipe the walls; and last, wipe all woodwork with a woolen cloth. Sweep the floor a second time. The unpainted and unvarnished woodwork and shelves must now be thoroughly cleaned.

To Clean Painted Woodwork.—Dust the woodwork with a cloth after the walls are dusted. Wash with warm water (not hot) and soap. Soda and sapolio remove paint, and should not be used. A brush is also necessary to take dust from grooves, and two cloths—one for washing and one for drying. Add a few drops of sulpho-naphthol or other disinfectant to the cleaning water.

While the shelves and woodwork are drying, wash the windows.

To Wash Windows.—Use a pan of hot water, a duster, two cleaning cloths and a dish of Bon Ami. Place them on a newspaper near the window. Bon Ami is but one of many things used for washing windows.

First Method.—Dust the window, and apply a thick suds of Bon Ami. Let it dry, and rub off with a dry cloth. Rinse the dusting cloth in the water and wipe off the woodwork around the panes. Newspaper is very good for polishing windows.

Besides a weekly cleaning, windows should be dusted every day.

A little alcohol added to the water in the winter prevents its freezing.

Second Method.—To clean windows, add a few drops of kerosene and ammonia to a pan of hot water. Use a duster, two cleaning cloths, and a newspaper.

Dust the window, wash, dry, and polish.

Last, wash the floor. This is also new work but similar to scrubbing the table.

For cleaning the floor have a pail of hot water, a floor-brush, floor-cloth, and soap. Soda may be used, or Gold Dust.

The condition of the floor must decide which cleaning agent to use. A very greasy floor needs soda.

First, sweep the floor; then, wash a small space at a time and wipe off with a wet cloth; scrub with soap, following the grain of the wood; rinse and dry with a cloth wrung out in the scrubbing pail. Change the scrubbing water very often.

Return furniture to the kitchen when the floor is dry.

HOW TO CLEAN METALS

Always wash articles carefully before cleaning. After cleaning, wash in hot water containing ammonia, and dry carefully. The following cleansing agents may be used:

Tin—Sapolio or silver polish; whiting moistened with ammonia, alcohol or water.

Steel knives—Brick or Sapolio.

Silver—Silver-polish, or whiting moistened with ammonia, alcohol or water.

Gold—Silver-polish, or whiting moistened with ammonia, alcohol or water.

Copper—Vinegar and salt, then ammonia.

Brass—Vinegar and salt, then ammonia.

Zinc—Whiting moistened with vinegar, or powdered pumice.

Iron—Rub with oil, then scour with ashes or pumice-stone.

Nickel—Silver-polish, or whiting moistened with ammonia, alcohol or water.

HOW TO CLEAN A LIVING ROOM

"The Home School," by Ada Wilson Trowbridge, published by Houghton, Mifflin Co., Boston, furnishes this extract, used by permission.

Sweeping.—When cleaning a room, have the windows open to let out the dust and freshen the air. When possible, have a vacuum cleaner. Use both sides of the broom for sweeping, using the narrow sides to take the dust from the cracks, and the broad sides for the floor, and sweep with short strokes, being careful not to scatter the dust up and about the room.

Always hang up a broom when not in use, and wash brooms occasionally in warm soapsuds or in warm water and ammonia.

Always sweep a floor thoroughly before scrubbing it, or before oiling it. Begin at the corners of the room and sweep toward the center, collecting the dust in little piles instead of carrying it from one end of a room to another.

Do not sweep the dust from one room to another, but sweep each room separately.

Remove small rugs before sweeping, and large ones that cannot be removed, fold back to the center of the room, to have as much of the floor exposed as possible. After sweeping a floor, go over it with a cloth or dust-

mop moistened with kerosene or with some good floor oil.

Rugs.—Shake the small rugs out of doors. When sweeping or beating rugs, put them on the ground; do not hang them over a clothesline, as the line will in time cut even the strongest rug. Beat both sides thoroughly, then sweep with a broom.

Rugs may be cleaned with carpet-soap, and ought often to be freshened by wiping with warm water and ammonia. Use a tablespoonful of ammonia to a pail three-quarters full of water.

Floors.—Hardwood floors are the best, and may be finished in dark or light shades, to suit the taste of the household.

Do not scrub hardwood floors, but clean with a little kerosene or floor oil. A wax finish may also be used.

When it is necessary to clean with water, use half a pail of warm water and two tablespoonfuls of kerosene.

Softwood floors may be painted or stained. A stain is the better finish when the floors are not too much damaged or discolored.

Floor varnish may be used over a stain. When possible have floors painted or stained, and use rugs that may easily be cleaned instead of a carpet fastened to the floor. It is cleaner, most healthful, and more attractive to furnish with rugs.

Softwood floors may be cleaned with luke-warm water and kerosene, or with a cloth or mop dampened with floor oil.

Clean off all grease-spots from floors with soap.

Clean all dust-mops, brushes, etc., with ammonia and warm water.

BREAD MAKING

Suppose you try to plant a yeast garden and make a loaf of bread. For one loaf of bread:

½ pint of water or milk

¼ yeast cake, softened in ½ cup of water, or
½ cup of liquid starter
1 teaspoon of salt

If a crumbly crumb is liked, use 1 teaspoon to 1 tablespoon of lard or drippings or butter.

If sweet bread is liked, use 1 teaspoon to 1 tablespoon of sugar.

At first use enough flour to make a batter (about 2 to 2½ cupfuls).

After the batter has become very light add enough flour to make a dough. I cannot tell you how much flour to use at this time, for different kinds of flour vary so much in the amount of water they take up, but do not have the dough either very stiff or very soft. Knowing the characteristics of yeast, you will not have any trouble in understanding the following directions:

Have hands, cloths, and utensils scrupulously clean. If milk is used, boil it up once, add salt, butter, and sugar, and then let it cool until it is about luke-warm. It is better to boil the water used, for it may contain some living things harmful to the yeast. After the liquid has cooled, add the yeast and enough flour to make a batter and then heat it well to put in plenty of oxygen. Cover with a clean cloth and set in a warm place until light. If compressed yeast or "starter" is used, the batter will be light in three or four hours. If dry yeast is used, it will take at least over night for the yeast to get a good start. When the batter is light, add enough flour to make a dough, and knead it until it is no longer sticky. Then put it back into the same bowl or pan in which the sponge was made and let it rise until it is a little more than double its original bulk. Shape into a loaf, put into a buttered bread pan, and let it rise again until it has about doubled its size. It should feel light and very elastic. Bake at once in a moderately hot oven for 40 to 45 minutes. This will not make a very large loaf of

bread, but I hope you are going to learn to make and to like the small loaves of bread, for they are easier to bake through and they have a larger amount of good crust.

A good loaf of bread should be evenly porous; should have a sweet, nutty flavor; should be thoroughly baked; have no odor nor taste of yeast; the crumb should be tender and elastic; the crust should be well browned; it should be so palatable as to encourage the family to make it a prominent feature of the meal.

SEWING

PREPARATIONS FOR SEWING

The hands should be perfectly clean.

Sit with the lower part of the spine against the back of the chair, both feet upon the floor, the right foot a little forward. The light should come over the left shoulder so that the right hand may not shade the work.

The articles needed should be placed in a bag or basket ready for use.

An extra needle should always be threaded for use in basting.

Never sew without a thimble. It is used to push the needle through the cloth and as a protection to the finger.

To measure the thread sit with the left side next to the table. Take the spool in the right hand, bring it to the waist line on the left side, take the end of the thread in the right hand, and unwind until the right shoulder is reached. If the cotton is not too coarse, it should be broken; coarse linen or silk should be cut slantwise that the end may go easily through the needle. Never bite the thread.

To thread the needle, hold the end broken from the spool between the thumb and the first finger of the right hand to make a fine point. Take the needle between

the thumb and first finger of the left hand, rest the hands together to steady them and put the thread through the eye of the needle. While drawing the thread through the cloth it should be held between the middle fingers of the right hand. Holding the thread in the hand soils and moistens it and it also causes jerking motions instead of graceful ones.

The size of the needle depends upon the material to be sewed. Better use too fine than too coarse needles.

When the work is passed to mother, or when putting away unfinished work, the needle should be carefully put into the cloth.

The emery should be used when the needle does not go easily through the cloth.

A knot should be used to begin basting, running and gathering, and in stitches where there is to be great strain upon the seam.

HEMMING AND PATCHING

Material.—Long cloth or fine, bleached muslin. One piece 5 inches on woof and 6 inches on warp. Needle No. 10. Pink cotton No. 50.

Hemming.—Fold the raw edge of material over one-fourth of an inch and crease down and then fold over again as wide as the hem is desired. Baste with uneven basting stitch. Hem by taking up about two threads of material, then run needle through the fold of hem, taking stitches about one-eighth of an inch apart. In hemming the needle should slant with edge of fold or hem. Sew from right to left.

Patching.—Cut worn place square and clip corners diagonally one-fourth inch from edge; crease edges down evenly. Place a piece of same material under hole, being careful to match warp and woof of the material. (Hem on the right side first.) Turn on the wrong side and trim off the edge of patch to one-half inch in width; turn edges under and hem down.

This method of patching is for use on muslin or any worn wash materials.

BASTING STITCHES

Two basting stitches are here taught. They are each worked from right to left.

Material.—Unbleached sea-island muslin. One piece 6 inches on warp by 7 on woof. Needle No. 7 or 8, pink cotton No 50.

Begin at corner of material and draw one thread one-fourth inch from selvage edge on warp and one thread one-half inch from raw edge on woof. Cut carefully along space where thread was drawn. Divide this piece into three equal strips 6 inches long warp thread by 2 1/3 on woof.

The line of sewing that joins two or more pieces of material is a seam. Basting is commenced with a knot and finished with two stitches, one taken over the other. Every basting knot should be large and placed where it can be easily found when removing bastings.

The Even Basting Stitch.—Place knot on top of seam one-fourth inch from edge of goods and take each upper and each under stitch about one-fourth of an inch long. Finish the line of basting by taking two stitches, one over the other on top of seam and do not cut thread shorter than one inch. The even basting is used where there is likely to be some strain on the basted seam.

The Uneven Basting Stitch.—Place knot on top of seam and take every under stitch one-eighth of an inch long and every upper stitch one-fourth of an inch long. The uneven basting is used where basting is needed to keep the line of sewing straight and to hold the cloth in place while sewing.

To remove bastings the thread should be cut every few inches. Be careful never to draw a knot through the material. In velvet every alternate stitch should be

cut and the thread pulled up with the pile. Velvet and velveteen should always be basted with silk.

Never baste on the line of sewing and never sew through a basting.

SEAM STITCHES

Here three seam stitches and two finishing stitches are taught. Running: Two runs and half back, half back and back stitch.

Material.—Indian Head unbleached muslin. One piece 6 inches on warp by 10 on woof. Needle No. 7 or 8 and pink cotton No. 50.

Begin at corner and straighten material by carefully cutting between two threads without drawing a thread. Always cut off selvage edge, as the weave near the edge is close and uneven. Divide this piece into 5 equal strips 2 inches of woof by 6 on warp.

Running.—Two lengthwise edges are carefully pinned together and basted with uneven basting stitch one-half inch from edge. Running is started one-fourth inch from edge by taking two or three stitches over each other; the needle is run or shaken along through both pieces, taking up a number of stitches at a time, which are of equal length on both sides. Join the thread by sewing over the last few stitches, fasten the thread by sewing over the last stitch of the seam two or three times. Always cut the thread.

Running is not a strong stitch and should not be used for any seams that have to bear strain. It is used for tucks and gathering.

Two Runs and Half Back.—Run two stitches, bring the needle out ahead, twice the length of the running stitch, put it into the cloth half way back, bringing it out ahead the length of the running stitch. The effect on the right side should be as regular as running. This makes a stronger seam than running and may be used in French felled seams and flannel seams.

The Half-back Stitch.—This is made by taking one stitch, going back half way over it, then bringing the needle out ahead twice the lengh of the stitch, going back half way each time from where the last stitch came out. The effect on the right side should be as regular as running. This stitch is used in place of back-stitching where there is no great strain.

Back Stitch.—This is made by taking the stitches back to the last stitch. This is done by taking one stitch and going back over it, bringing the needle out ahead once the length of the stitch and then placing the needle back into the same stitch, and so on, making the stitches follow each other without any spaces between and should be even and regular.

It is the firmest stitch used.

It should be used in all seams where strain is coming and in fine needlework to take the place of machine stitching.

STOCKINET DARN

Matertal.—Unbleached stockinet, 4 inches square.

Always darn on right side of stocking, as that will leave the inside smooth and soft. Hold the stocking over the left hand while darning. Do not use a darning ball, as it is apt to stretch the stocking and make the hole larger and often changes the shape. The lengthwise threads are put in first, then the crosswise threads are put in, by taking one thread over and one thread under the needle. The threads must not be drawn tight. Weave short stitches into the cloth about three-eights of an inch out from the edge of the hole. Weave through worn places rather than trim them out.

PATCHING

Material.—Striped gingham, one piece $5\frac{1}{2}$ by 9 inches. Needle No. 12. White cotton No. 150.

A patch is a piece of cloth sewed onto a garment to repair it. It may be put on in various ways, as overhanding, hemming, or darning.

A bias is a cut through the woof and warp threads.

A true bias is cut by laying a lengthwise or warp thread on a crosswise or woof thread and cutting on the fold. It is strong and elastic.

1. *Joining Straight Edges.*—Fold under edges of material width of seam. Put folded edges together with right sides out; overhand by taking up only a thread of each fold with stitches close together. Sew from left to right.

2. *The Hem Patch.*—This method may be used when a stronger patch than the overhand patch is needed, but where it is not desired to show. Catch stitching the edge on the wrong side shows less than turning under and hemming.

3. *The Overhand Patch.*—Baste the patch on the same as for the hem patch. Fold patch back on the material and overhand the same as in joining. Press seams open and overcast.

When patches are near a seam or band it is better to rip out the seam or band, so the patch can be sewed into the seam.

4. In joining biased edges, baste carefully so as not to stretch the edges.

CLOTH DARNING

Cloth darning in different cuts and darning to patch is taught here.

Material.—All wool cashmere. A piece 6 inches on woof and 8 inches on warp. A fine needle and white cotton No. 100 for the darning and blind hemming.

Blind Hemming.—Fold the hem and baste. Split silk of the same shade should be used. Insert the needle about one-fourth inch into the folded edge of the hem and below the fold. Take only a thread of merely a hair of the material, drawing the thread through lightly so as not to show any mark through to the right side. The stitches are straight instead of slanting, as in regular hemming.

1. *Darning a Crosswise Tear.*—In darning garments a warp thread of the same material or split silk of the same shade would be used. Never use a knot in darning thread. Take small stitches straight with warp thread back and forth fully three-fourths of an inch out on either side of tear. Where garment is badly worn or frayed the weaving should extend out to cover all weakened parts.

2. *Darning a Bias Tear.*—Run darning thread straight with warp thread, being careful to keep the distance on either side of tear the same.

3. *Darning a Snag or Tear on Both Warp and Woof.*—Darn the warp or lengthwise tear by running stitches straight with woof threads, the woof or crosswise tear by runnng sitches straight with warp threads. The last darn put in will cross the first darn at the corner.

4. If the garment is worn thin and badly raveled, a piece of cloth may be placed underneath and the material darned down to the patch.

PAINTING AND GLAZING

Composition of Paints.—Paint is composed of two ingredients, the pigment, which gives body and color, and the fluid in which this color is dissolved or suspended. If the painting is for protective purposes, the fluid is oil; if for decoration only, it may be water.

The best white pigment is pure white lead, while the most common black pigment is lamp black. Pigments that will give the different colors and shades of color may be used as desired.

The oil most commonly used by painters is linseed oil, the drying qualities of which are improved by boiling, when it is commonly known as boiled oil. Its quality can be determined by looking through a small bottle filled with it. Good, fresh oil should be clear in appearance and have very little odor; poor oil is not clear and has a strong and rancid odor. If paint is too thick,

good oil should be used to thin it. Driers are frequently used in order to cause the paint to dry more readily; in fact, some colors will not dry at all without their use.

A varnish is a solution of a gum or resin in turpentine, linseed oil, or some like fluid, and is used to produce a hard and shining surface. A cheap varnish suitable for ordinary work, can be made as follows: Add 2½ pints of turpentine to 3 pounds of dried resin, shake well and allow to stand for a day or two, shaking occasionally. Add 5 quarts of boiled oil; shake thoroughly and allow to stand in a warm room until clear; then pour off the clear portion and it is ready for use.

Before beginning to paint, the surface to be painted should be thoroughly cleaned, and all spots and dust removed. The knots should be covered with shellac, which can be easily obtained, and all nail holes, bad joints, and cracks should be filled with putty.

After making choice of color obtain a large sash tool or pound brush (these brushes being handiest for jobs which have a fairly large plain area) and a lump of pumice-stone to clean the oil paint off if it has been previously painted. The tradesman, of course, would use his blow-lamp and scraper in the case of a door. When a good "ground" has been obtained, take a small quantity of paint on the brush, which should not be dipped more than half way in, and even then have most of the paint adhering patted off on the tin side. Work this well into the object, making the strokes up and down or from left to right and back again, not in circles or criss-cross. Repeat this until all the surface is evenly coated. Let this dry, clean up with rough glass paper or pumice, used lightly, and repeat. Still another coat of paint can be added if thought fit, or it can be varnished.

New woodwork should receive at least three coats of paint. The first coat is called the priming and should be thin and readily absorbed into the wood. The stop-

ping up of the nail holes, etc., should be done after the priming is applied.

The intermediate coats should then be applied as evenly as possible, the second coat being laid at right angles to the grain of the wood, while the third coat should follow the grain, care being taken to leave no brush marks. The final coat should give the desired tint.

In repainting old work, it should be carefully cleaned with a knife and then gone over with powdered pumice-stone and water, rubbing the greasy parts with lime.

Whitewash is used for common walls and ceilings where, for sanitary reasons, a frequent application is better than a coat which would last longer. It is made from pure white lime, mixed with water and is improved by adding a pound of pure tallow to every bushel of lime. Lime for whitewash should be slaked with boiling water and, when slaking is complete, the lime can be dissolved in water and applied with a comon whitewash brush. Whitewash is improved by adding 2 pounds of zinc sulphate and 1 pound of common salt to every half bushel of lime used.

Whitewash can be tinted to any color desired by the use of tints, which are readily procured.

Take your brush, which should be of a broad, flat design, dip and pat off on the side of the bucket any superfluous whitewash, then apply to the wall or ceiling with long, straight strokes. Before doing this, however, be sure to give the surface a good brushing to remove dust and scaly plaster. By taking a small quantity on the brush and working it well in, better results may be obtained than by trying to put on a thick layer with one stroke.

When working on ceilings it is well to make a small scaffold by putting a plank across two pairs of steps. If a brush with a long handle is used, don't forget the "drip

ring," or at least a piece of cloth tied around the handle about a yard from the head of the brush.

Small Repairs to Furniture.—Broken chair backs. When these are the result of the wood-plugs drying in, glue a thin wafer round the socket, and when this is dry and set, refix the plugs with glue also. To use nails will, in a large majority of cases, only mean more repairs, owing to the wood cracking. When the wood is split, a better job is made of the repair if the damaged part is cut away and the ends thus left finished with Z-ends. Make a piece to match that cut away, making the ends fit into parts already prepared, then glue. (Treat broken legs in the same way.)

If the joints have got loose, cut fresh corner wedges, fi possible without splitting the wood. Remove the loose part, scrape off all the old glue, and refit. Give the glue time to set before using the article.

In setting a pane of glass to replace a broken one, care should be taken to remove all pieces of the old putty, which can be done with a knife or with a hot iron. When the glass has been fitted, a thin layer of putty should be put on the frame and the pane of glass pressed into place against this. This prevents the glass from touching the wood and renders it less likely to be broken. The putty should then be applied smoothly with a putty knife. Glazier's points should be used to hold the glass in place until the putty is applied.

Putty can be made from whiting and linseed oil, but can be more readily bought already prepared.

HOW TO TAKE CARE OF A BABY

HOW TO GIVE HIM A BATH

The room should be comfortably warmed to about 72 degrees. It is not wise to have the room so hot that the baby perspires, as there is grave danger of his being chilled when, the bath over, he is taken into another

room where the temperature is lower or when the room itself is rapidly cooled. It is better for the baby to have his bath in a room at ordinary temperature than in a bathroom which is heated by oil or gas. The baby should be protected from drafts by screens or by a shield made by hanging a blanket over the backs of two chairs. The full tub baths may be given as soon as the scar where the naval cord was attached has fully healed. An infant bathtub serves every purpose for the first year of a baby's life, or until he has outgrown it. A tiny baby may be bathed in a basin or bowl for some weeks. This basin should always be warmed before it is filled. The water should be at body heat or slightly above; that is, from 98 to 100 degrees. A bath thermometer is an inexpensive convenience and should be provided, but if none can be had the mother may test the temperature with her elbow. When the water feels neither hot nor cold it will be comfortable for the baby. It should be tested after the baby is undressed and ready to get into the water. Hot water should never be added to the bath while the baby is in the tub. Never leave a young baby alone in the tub. Never put the baby in the bath while the tub is standing on a stove or heater; he might be seriously burned in this way.

No unnecessary exposure or delay should take place, for in cold or cool weather the baby is quickly chilled. To prevent this, all the necessities, such as soap and towels, clothing, bath apron for the mother, tub, water, thermometer, powder, and the like should be placed at hand before undressing the baby. In some cases it may be much more convenient to give the bath at night, just before the baby's bedtime. Never bathe a baby within an hour after feeding. A baby should always have his own towels and wash rags. Soft cheesecloth makes excellent rags; the towels should be old and soft.

Before the baby is completely undressed his scalp should be washed, the head lowered a little to avoid getting soap in the eyes. Use a pure, bland, white non-transparent soap. Very little soap is needed for cleaning a baby's skin, and it is most important that the skin be thoroughly rinsed. After the head and face have been washed and dried, remove the clothing and soap the entire body; then place the baby in the bath, holding him with the left forearm under the neck and shoulders, the hand under his arm, lifting the feet and legs with the right hand. Use the right hand to sponge the entire body, then lift the baby out and wrap him at once in a warm towel. Dry carefully with soft warm towels, patting the skin gently. Never rub the baby's tender skin with anything less smooth than the palm of the hand. Dress as rapidly as possible, if the weather is cold, taking great pains not to expose him unnecessarily. When the weather is very hot in summer, only a slip and diaper are needed.

If the skin is carefully dried after the bath there will be little need of powder, and it should never be used as a cover for careless drying. It is well to use a little pure talcum powder in the creases and folds of the skin, under the arms, and around the buttocks, but it should not be used so generally as to fill the pores of the skin and clog them, and should be applied only after the skin is dry.

For one reason or another a baby sometimes objects to his bath. In such cases judicious coaxing may be employed. Toys which float will often divert the baby's attention and make him forget his objections to the water. Sometimes lowering him into the water wrapped in a towel, or covering the top of the tub with a cloth, so that he cannot see the water, will accomplish the result. If his dislike has been caused by having been put at some previous time into a bath which was too hot

or too cool, let him dabble in the water first with his hands and feet until he is reassured. Sometimes the baby will cease his objections to the bath if his face is not washed until after the tub bath is over. Force or harshness is worse than useless in this as well as in other matters in the training of the baby. The same result is accomplished if the baby is induced to the desired action by pleasant means and his sensitive nervous system is not upset.

Cool Baths.—The temperature of this bath may be gradually lowered until it is down to 96 degrees for a baby of 6 months and 90 for one of 1 year of age. Toward the end of the second year a robust baby may be given a cool sponge, but he should never be frightened or chilled in administering this wholesome treatment. He should be gradually accustomed to it by being allowed to stand in his tub at the end of his daily bath with his feet in the warm water, while a sponge of cooler water is squeezed over the throat and chest. The water may be made colder by degrees until he is taking it quite cool and enjoying it. He must be rubbed quickly and thoroughly at once until the skin is red and glowing. If this reaction does not come or if the child shows any appearance of chill or has cold hands and feet two or three hours after the bath the treatment must not be repeated. Provided the glow always comes, a quick cool sponge douche or shower at the end of the bath is one of the best tonics that can be found, and induces an excellent habit for after life. After a cool bath the child should always have vigorous exercise for a few minutes in order to promote the necessary reaction.

Salt.—Use half a teacupful of common or sea salt to each gallon of water. The salt should be dissolved in a cup of warm water to prevent the sharp particles from pricking the skin. The doctor sometimes orders a salt bath.

Starch.—Add a cupful or ordinary cooked laundry starch to a gallon of water.

Soda.—A soda bath requires two tablespoonfuls of ordinary baking soda to a gallon of water, dissolving it in a little water before adding it to the bath.

Bran.—Make a cotton bag of cheesecloth or other thin material, 6 inches square. Fill loosely with bran. Soak the bag in the bath water, squeezing it frequently until the water becomes milky. Starch, soda, and bran baths are often used in place of the ordinary soap-and-water bath when the skin is inflamed, as in chafing or prickly heat.

Sea Bathing.—Although a baby under two years should not be given a sea bath, a word of caution about sea-bathing for young children may not be amiss. The cruelty with which well-meaning parents treat young, tender children by forcibly dragging them into the surf, a practice which may be seen at any seaside resort in the summer, can have no justification. The fright and shock that a sensitive child is thus subjected to is more than sufficient to undo any conceivable good resulting from the plunge. On the other hand, a child who is allowed to play on the warm sand and become accustomed to the water slowly and naturally will soon learn to take delight in the buffeting of the smaller waves, but he should not be permitted to remain more than a minute or two in the water, and should be thoroughly dried, dressed immediately, and not left to run about the beach in wet clothing.

HOW TO LIFT THE BABY

To lift a young baby, slip the left hand under the back beneath the shoulders, spreading the fingers in such a way as to support the neck and head, and lift the feet and legs with the right hand. Never lift the child with-

out thus supporting the spine. When a baby has learned to hold up his head and has gained considerable strength in the muscles of the back and neck, he may be lifted by grasping him with outspread fingers under the armpits, the body held firmly, so that the entire strain does not come on the shoulders. A baby should never be lifted by the arms. It is possible to dislocate the shoulder joint by careless lifting.

HIGH CHAIR

A baby should not be put in a high chair until he is quite well able to hold the spine and head erect, and should never be left in such a chair for any length of time. There is grave danger of producing a deformity of the spine if a baby is forced to maintain a rigid sitting position for long periods before bones and muscles are sufficiently developed. Mothers should be on their guard to prevent the possibility of the baby being fastened in a high chair and left there to take care of himself during her absence, as maids and nurses may resort to this neglectful method of caring for the baby at such times.

TOYS

Since a baby wants to put everything in his mouth, his toys must be those that can safely be used in this way. They should be washable and should have no sharp points nor corners to hurt the eyes. Painted articles and hairy and woolly toys are unsafe, as are also objects small enough to be swallowed, and those having loose parts, such as bells and the like.

A child should never have so many toys at one time as to distract his interest. He will be quite satisfied with a few things for the time being, and a handful of clothes-pins, for example, will often please just as much as an expensive doll or other toy. It is an excellent plan to have a box or basket in which to keep empty spools and other household objects which the baby may play with.

Some of the articles which Johnson names as favorable to the learning of the ways to use means for ends in the exercise of a baby's sense powers are, a celluloid ball, rubber animals, boxes, nests of boxes, bottles, blocks. Says Mrs. Washburne:

"The right toys are those that the baby digs out for himself, from such of the household utensils and belongings as can be spared for his use. A bit of chain, some old dominoes, a pair of scissors stuck in an empty spool, a lot more spools, some cards, an old magazine that he can tear, a biscuit-cutter, some little tin dishes, an old purse tasting of leather, a small wooden box with a cover that slides in and out—such are the things that he picks out for himself and that a wise mother will preserve for him. If she provides a table or bureau drawer in which they can be kept, and then lets him pull out the drawer and rummage to his heart's content, she will find him pretty well satisfied with his toys.

"Out of doors, nothing is so good as a sand-pile with a pail and shovel. The baby who can only sit up when he is propped will love to sit in the warm sand, in a little nest, and fill and empty his pail, and ply his little spade with wabbly fingers, daily growing stronger with exercise."

HOW TO PLAY WITH A BABY

As Kirkpatrick tells us:

"As soon as he can move his hands he should not be amused wholly by what others do, but rather by what *he* can do, to objects and with them. Others may do things that lead the child to discover new possibilities for his amusement. By so doing they interfere with his own educative play activity and hinder his finding out the real qualities of objects and his own powers in relation to them. The power of varied manipulation of objects for different purposes is what gives the child an ad-

vantage over any animal in the formation of free ideas. His mental development is therefore best favored by allowing him, during this period, plenty of opportunity for such manipulation. Suggestions as to ends to be gained, are not needed in this stage, as they are at a later period. The principle of novelty should be made much of at this time. None of the child's playthings should be with him all of the time, but those not in use should be placed out of his sight for a while, as soon as he loses interest in them, then restored to him again when they will arouse his interest anew."

Some of our play may consciously be intended to train the child. A sensible article in "The Foundation Library" gives the following suggestions: "First, let us take the most universal of playthings, the ball, and roll it back and forth, finally introducing the signal, 'One, two, three, roll!' Stand a tall block or tenpin on the floor and roll the ball to knock it down. Place a nickel call bell on the floor and roll the ball to make it ring.

"If you have the kindergarten balls you wll be ready for some ball plays. First, learn the colors, red, orange, yellow, green, blue, violet, one at a time, and match them to articles of the same color in the nursery, such as draperies, wall paper, rugs, mother's dress or sister's hair ribbon. Put six in a row and ask the child to shut his eyes. You take one ball away, and ask the child to open his eyes and tell which ball is gone. Hide all the balls and let the child bring them to your lap, name the balls over and see if there is one missing, and if so, name that. Hide a ball and call out, 'hot,' 'cold,' 'burning,' as the child goes toward or away from the ball.

"Let the child hunt for his lunch cracker in the same way.

"Try to toss the ball in the air, and catch it, using the signal, 'One, two, three, toss!' Toss the ball to some one else, then throw and bound ball, then make a ring

with twine on the rug or chalk on the floor and roll the ball into it.

"A pretty game may be played with the waste-paper basket placed in the center of the room. If there are a number to play, all the better. Each one is given a colored ball and told to wait for the signal, 'One, two, three, throw!' All throw at once, but stand still to see where the balls go. The mother then invites some one to go to the basket and see if any balls have gone in, and count them as they are taken out one at a time. The signal then may be given to pick the balls up and begin over again. There will be no confusion if the mother is particular in regard to the signals of the game."

One readily sees how attention, alertness, patience, agility, and the exercise of sight, touch and hearing all come through these simple plays. It is just as feasible to use some of the tools of education in play as anything else. Here is a group of suggestions from Mrs. Allen:

"A child of two likes to learn to count as part of learning to talk. Encourage this, but try to make ten the stopping place, until he has learned so far thoroughly. At about three years old begin to count things. He will probably understand already how many three is. Count things at the table; count beads, blocks, etc., at any time you happen to think of it. Now and then see if he can count them. If he can, show your pleasure. Supply alphabet blocks, with pictures, as early as two years old. Call the letters by name often in playing with the child. Play games with them; e. g., turn all the pictures down and guess what picture is under each letter, etc. To a child of three, sing the alphabet."

A great deal of the play of children of this age is by themselves and consists of the exercise of the instinct of curiosity by repeated experiment. Some of the things which a little child likes to do with things are: turning keys in locks, opening and shutting doors, opening and

shutting drawers, opening and shutting boxes, pouring things out of a bag and putting them back, taking things out of a drawer and putting them in again, playing with water, playing out in the rain, making soap suds in warm water, playing under the hose with a bathing suit on.

Some suggested articles for utilizing this experimental faculty in children are these:

Nest of boxes for opening and shutting and closing inside one another;

Big blocks to pile one on top of another and knock down. The child is too young for building yet.

Special drawer with key where he may keep miscellaneous things to take in and out, such as: pieces of cloth and felt, pieces of paper, pictures to cut out, little odds and ends, a few boxes of such things as seeds and spools and buttons and beads and shells to play with;

A big bag with a stout draw-string for him to open and shut and fill with dried beans and peas, or spools or bits of bright-colored cloth;

Little bags with an assortment of things;

Stout old pickle-bottles with such things as beans within, to shake up and down.

An old newspaper, some paste made thin and some pictures to daub on the back with a big brush.

Some suggestions as to the directing of the destructive tendencies in children, which are really the outgrowth of this experimental sense, are:

Give them some paper to tear up and muss, pieces of cloth to cut up, something soft to be picked to pieces, spools of string; give them toys which are intended to be taken apart and put together, like nests of boxes, big Hailman wooden beads, for stringing on shoe laces, a peg-board, a box of big blocks, some of the Montessori apparatus.

IV

WORK IN THE OFFICE, STORE OR MANUFACTORY

This chapter is not intended as a text-book upon all the trades and vocations, but simply to give a few practical suggestions to those who may be employed, while at school, for week-ends or vacations with their fathers or with other business men. First, we would like to quote part of a statement which was gathered by the superintendent of schools in Houston, Texas, from a very fair and very successful storekeeper in that city. What he says applies to young workmen and bookkeepers and errand boys nearly as much as to young clerks.

The first thing that I want of a clerk is that he should be attentive. Some children seem unable to put their minds on what they are doing, and to keep it there. I have no use for a clerk who does one thing while he is thinking about something else. I want him to put all his mind on the thing he is doing. If boys and girls in school learn nothing else than merely how to pay attention they learn something that is worth money to them.

Then again, I want boys and girls who are accurate. It is not necessary that they be able to do a great many things, but what they do, they should do well. They should make plain figures. If a boy makes a 2, he should make it so that just anybody can tell whether it is a 2, or a 5. If he writes the name of a customer, he should write it, so there will be no doubt about the way it is spelled. It is not necessary that our young folks write beautifully, or even that they write particularly rapidly

when they first come to us; but it is necessary that they should write plainly.

It is necessary that a boy know how to use a decimal point. If he makes a bill and you cannot tell whether it is for $3.05 or for $305, it is absolutely useless. When he puts down figures to add on a bill, he must put one exactly under the other, so that there will be no difficulty in adding them.

Another thing that we want in even our youngest employes is courtesy. Many children do not realize how much politeness counts for in life. People in a store would always rather buy from a clerk who is good natured and polite than from one who is cross or rude. If the schools will teach the boys to be polite, they will teach something that will be of a great deal of practical value to them.

Then, again, we want them to have an idea of propriety. That is, we want them to know that certain things may be perfectly proper for certain places, but altogether out of place in others. For instance, our boys and grls ought to know, without being told, that it is not the right thing to do to chew gum in a store, or in any other public place. I have no use for a clerk who will chew gum while standing behind the counter, or waiting on customers.

I try to make my young people feel that the customer is boss of the store, even more than I am. I tell them that it is not worth while for them to jump up and get busy just because they see me coming, but the time for them to jump is when they see a customer coming. If they please the customer, they please me. If they do not please the customer, it is impossible for them to please me, no matter how busy they may seem to be.

A few other suggestions may be made concerning matters that were not touched upon in the statement above.

1. Dress according to your work. It is a bit hard for a young person who wears good clothes in school to put on rough garb for rough work. One is apt to fear the ridicule of his chums. The chum, however, is not the one who pays the wages, and nothing pleases a sensible employer more than to find his workers clothed as if they expected to do their work. The business man today fairly dreads the girl who comes to his office garbed as if for afternoon tea. This word is particularly needful in the case of boys and girls who work for their own parents, and who think because they are related to "the boss" that they should dress in unique apparel. It does not tend to harmony in the store or factory.

2. Punctuality is a minor matter, but yet important. There are really two kinds of employees: those who sell their time and those who sell their brains. (Of course, those who sell their time are supposed to have brains to offer, too). The one who sells his time must be true to his working hours. The expert who sells his brains may do work in an hour that means more for the concern than the full day's work of every one else in the office. When he gives that hour he really also gives his years of schooling, training and experience. But you fall into the other class. Your time is the major thing you have to offer. So, be prompt, in the mornings and after lunch, and don't spend your last hour in the day glued to the clock, or the last half hour getting ready to go home.

3. The manner of the young employee is much. It should be interested, because, especially if he be a school boy, wherever he is employed, he has much to learn. It should be alert, because he is on trial and is already competing with somebody else who is hunting for a job. It should be obliging, because no matter what he is paid it is probably more, at the start, than he is worth. It should be cheery, because that helps every one in the office.

4. The young workman ought to be loyal to his employer and his employment. This means that he will honestly and patiently try to do what he is told, if it is something that it is honest and fair for him to do. Of course, loyalty is a mutual word, and implies a requirement from the employer as well as from the employee. In an ideal world the interests of employer and employee will be one. They are already in the best business houses. But to-day the employer has an advantage over his working people, especially those who are inexperienced and unskilled. A few use this advantage unfairly. A mutual relation of loyalty requires that an employee shall do his work well and that his employer shall pay him the full sum of his agreed wages promptly. For either to fail in his part of this agreement would be disloyalty to the other. Few employers to-day forget this fundamental of loyalty, but many young workers who complain because of the smallness of their wages forget that they have perhaps not given a fair return even for their present wages.

5. No factor in early business experience is more vital than perseverance. Piqued by imaginary injustice or lack of appreciation many young people throw up their positions and thus start the habit of drifting rapidly from one place to another. They do not realize what their employers have put up with in suffering their inexperience and clumsiness. Of course the sooner one gets away from a place where he is a perfect misfit, the better. But the untrained person does not at once fit anywhere. Those who go from place to place, waiting until they are "suited" are doing themselves the great injustice of losing valuable apprenticeship somewhere, and are in danger of dropping at length into that hopeless class, known as "unemployables." This sort of dissatisfaction is not likely to arise if a student can find, for his vacation employment, some work that is

akin to what he intends to make his future vocation. Such work is bound to be interesting and satisfying.

One of the greatest business enterprises in this country is the firm of Marshall Field & Co., Chicago. This institution issues a "Rule Book," a copy of which is placed in the hands of every employee. Some quotations from this book will be suggestive as indicating what a model house expects of its young employees. The following terse and strong statement printed at the beginning of this book is entitled "The Marshall Field & Company Idea."

To do the right thing, at the right time, in the right way; to do some things better than they were ever done before; to eliminate errors; to know both sides of the question; to be courteous; to be an example; to work for love of the work; to anticipate requirements; to develop resources; to recognize no impediment; to master circumstances; to act from reason rather than rule; to be satisfied with nothing short of perfection.

We have arranged these quotations under the captions to which they belong.

COURTESY

The greatest courtesy is required at all times—whether customers wish to purchase, order or exchange merchandise, inform themselves regarding an article on sale or simply to visit. You will bear in mind that every person who enters the store is, in a sense, an invited guest, and should be treated as such.

See that every customer in every transaction is treatin a manner indicating that that immediate transaction is the chief point of interest in your mind at that time. We receive visits from many out-of-town people, and the impression which is made upon them by a few moments' interview with our employees remains forever in their minds. We are very desirous that visitors be

allowed to see that we understand how to do business correctly, and this effect can only be had when every employee treats every visitor with careful consideration.

It is a waste of energy to lose one's temper at the telephone.

Many employees in this store have become well known throughout the city because of their pleasant manner, special ability or other qualities. You will still further create character for yourself by impressing customers with your enjoyment in the work upon all occasions.

MANNER OF DRESS

Concerning this subject the rules are startlingly explicit.

Women and girls shall be required to wear black skirts at all seasons of the year. No exception can be made to this rule. From March 15th to October 15th each year they may wear shirt waists, in white or black, white with black stripes or dots, black with white stripes or dots (stripes narrow and dots small), or natural color pongee or linen. During extremely warm weather, round neck, collarless waists may be worn, the neck to be finished with an edge or insertion. Square or V-shaped collars must be avoided. Waists of very sheer, unbusinesslike material over colors, or with a great amount of insertion, and black waists with pipings, plaitings or bands of color must not be worn.

We prefer becoming and businesslike arrangements of the hair. Our girls and women will avoid extreme styles of hair dressing.

Men will avoid unusual color combinations of hosiery and neckwear and loud flashy apparel.

DEPORTMENT

Do not go about the store arm in arm. Whistling, singing, or humming in the store must be avoided.

You will use dignity, respect and care in addressing other employees. A careless word or an act of familiarity on your part may, in the mind of some passing customer, cause a reflection to the discredit of yourself and of the one associated with you.

The use of gum, tobacco, candy, fruit, nuts or lunch of any kind while on duty is prohibited.

OBJECTIONABLE WORDS AND EXPRESSIONS

It is preferable to use the word "We" instead of "I" in cases other than those of a strictly personal nature.

Always use the word "Madam," instead of "Lady," in addressing women who visit the store, when not familiar with the visitors' names.

V

WORK IN THE STUDY

HOW TO STUDY

Persons of different temperaments go about their work in different ways, but the following brief suggestions may be helpful to the average individual in regard to home study.

1. Choose the time when you feel the best for work and make that your regular work time. Some come home feeling the momentum of the school still strong and like to sit down at once and get their work out of the way. Others like to reserve the evening for the work. For most a brief bit of exercise after school is better, and then a solid piece of work before supper.

2. In choosing the study period do not let the week-end alter the regularity of your plan. Because there is no school on Saturday and Sunday many students do not study after school on Friday, thinking that among the many hours before Monday morning a convenient hour for study will appear. That hour never comes. A delayed study hour casts a shadow over each other hour until it is disposed of.

3. Choose a secluded place for study. If there is a quiet corner in your home, find it. If not, ask to stay in school or go to the public library. Find a place where you cannot look out of the window and where you can hear the least noise from the street. You should be of strong enough mind to resist the temptation that comes from idlers who would not only lose their own good but spoil your work, but it is just as well to make resistance easier by getting where they cannot reach you.

4. Place yourself in your study where you will not see attractive pictures, books or playthings. Put yourself as nearly as possible in the conditions that you have in school, where there are no distractions.

5. Set your task clearly before you. See clearly what you have to do in justice to yourself and your work. Then make it even more definite by setting yourself a stent or a time limit, and be faithful to it. Don't shirk it by loitering, and don't kill yourself by exceeding it.

6. Go about your work in the most direct way. Have all your books, papers and implements right at hand. Take up your work in an orderly manner, the most difficult first. Try to remember how the teacher told you to go to work; use all that the work before you can do to help you; make at least one definite conquest during the hour. Do this calmly, cheerfully and briskly.

7. "When you get through pumping let go the handle." Study while you study, and play while you play. If you have done your best during the fair time that each subject is worth, then exercise, play and comradeship will put you in better condition to meet the next day's test than to become jaded over what you do not understand.

VI

WORK AT CAMP

The following suggestions are for the boy or girl who wants to make the necessary preparations for a family camp. It is presupposed that mother or the maid is to do the cooking and that the family life will go on about as usual, so far as refinement and custom are concerned, with much simplification. These hints are from an article by Dillon Wallace, and are used by permission of the Boy Scouts of America.

Anybody can sleep in a tent that somebody else has pitched, or under a shelter someone else has built. One may do this without understanding even the A B C of campcraft. But camping, as we understand it, means far more than that. It includes the ability to select a good camp site, to erect a tent or other shelter in quick time, to provide against bad weather, and also to guard against sickness by taking proper sanitary precautions.

The ability to do these things can be acquired only by practice and experience.

If two trees cannot be found conveniently located against which to build the lean-to, drive two stakes at the proper distance apart, lash the cross-pole to them near their top, and proceed as described.

Sometimes stakes cannot be driven firmly into the ground. In such cases two tripods will answer admirably in their stead. To make a tripod, cut three poles of the proper length. Near the top, or smaller end of the poles, lash them together, then spread the butts, and the tripod will stand alone. Two of these tripods will make an excellent support for the cross-pole.

In case well-leaved branches cannot be found for thatching, grass will do nicely. In places where well-foliaged saplings are to be found conveniently located the lower branches of four or five of them may be cleared off, and the tops of the saplings drawn together and tied. The bunched tops will make an excellent shelter. This may be improved and made nearly water-tight by leaning poles against the bent saplings, tepee fashion, and thatching well over all.

In making lean-tos or other improvised shelters considerable ingenuity and resourcefulness are sometimes required. Always erect them with the back toward the wind. I have spent many a comfortable night in the wilderness under shelter of this kind, sometimes when snowstorms were raging. Making good, serviceable shelters is simply a matter of practice.

Putting Up a Tent Alone.—Let us suppose it is an A or wedge tent—and this is probably the style most boys will use. Select two trees a convenient distance apart and stretch the ridge rope between them at the proper height, drawing it as taut as possible before securing it. Now peg down the two rear corners, drawing the bottom of the rear of the tent straight and tightly stretching it between the two pegs. Be careful to keep it aligned at right angles to the ridge rope.

Next peg down the two front corners, using the same precautions as in the rear, and also drawing each side taut and straight at the bottom from the rear peg on that side and at right angles to it. This done, the remaining pegs may be put in place. Any slack that may occur may be taken up by bracing up the ridge pole with two crotched poles, one in front and one in the rear.

Should there be no trees between which to set the tent, cut two stiff poles a little longer than the tent is hign at the ridge. Peg down the four corners of the tent in the position in which they are to remain. Go to

the rear, and with the ridge pole throw a clove hitch around one of the poles an inch or two from the top of the pole and as close to the tent as possible. It will be well to cut a notch around the pole to prevent the rope from slipping down when stretched.

Now lift the pole to a perpendicular position. This will raise the rear of the tent into place. Grasp the rope to keep it taut to hold the rope and rear of the tent in an upright position, while you go well back, at right angles to the rear of the tent, and secure the rope to a rock, stump or anything that will hold. It may be necessary to drive a stake for this purpose.

Using the other pole, guy the front of the tent in exactly the same manner as the rear. When the tent is finally pegged down it may be found necessary to tighten the guy ropes a little to stiffen the ridge.

It is presumed that before setting the tent the section of ground which the tent is to cover has been leveled and cleared off by cutting out brush, removing stones and knocking away lumps of earth with the back of the axe.

Ditching It.—Now the tent must be ditched, in order to carry off surface water in case of a heavy rain. For this purpose a ditch about 4 inches deep should be dug along the four sides of the tent (outside of course), with a drainage ditch leading off an the lowest side, to carry away the water. If the boy is called upon to ditch a tent at a time when no shovel or tools are at hand he will find that a sharp stick will loosen the earth, and a tin plate will remove it.

Making a Bed of Wild Material.—Spruce boughs, because they have a greater curve and more body and buoyancy, are better than fir balsam. Break, do not cut boughs or limbs with your axe, for this purpose. Boughs that are too big to break with the hand are too big to make a comfortable bed. I do not mean by this

that small sprigs are to be used. They are not, for they possess no spring and pack flat and hard. But it will be found that with a little practice pretty large boughs can be broken easily with the hand. Grasp the bough around the stem and bend it upward and backward, and it will snap off at once, even though the stem is nearly as thick as your thumb, if it is a coniferous tree. If no boughs are obtainable, grass or dried leaves will serve very well for a bed.

Fire Without Matches.—The back of your knife struck sharply upon flint or quartz will throw a spark. Either dried puff balls or fungus-decayed wood will make good material to catch the spark. This is the trick—to catch the spark—but a little experience will teach you how to do it.

Plenty of wood, good water and good drainage are the things to be looked for in selecting a camping place.

Careful About Fires.—In this connection it may not be amiss to enter a caution about fires. Choose a naked piece of earth, if possible, upon which to make the fire. Never make a fire upon dry leaves or dry grass. Clear away any surrounding inflammable material to avoid danger of the fire spreading. Put out the very last spark before leaving it, even for a short time.

In case of rain, or in any case in fact, all articles that may be injured by wetting should be stowed in the tent. Usually if placed around the sides they will occupy little room and will not clutter the tent inconveniently. In case there is no tent a lean-to shelter, well thatched, will be found a good protection. In this case the things should be neatly piled upon poles or branches to raise them from the ground. The lean-to should have its ends protected and stand with its back to the storm.

Building the Latrine.—For the latrine choose a spot far enough away to preclude odors reaching camp, and in a position whereby no possible drainage from it may contaminate the water supply.

Dig a pit about two and one-half feet wide and four or five feet long. At each end and slightly forward of the pit firmly set a post extending eighteen inches above the ground; sixteen inches directly behind each of these posts set another post, which should extend two and one-half inches above the ground. From the front post to the rear post at either end of the pit nail a stiff crosspiece. These are to serve as support for a seat board, which should be about six inches wide and nailed to the crosspieces, flush with the front of the latrine. Another board nailed to the rear posts will serve as a back, and the front may be closed with boards.

If obtainable, a quantity of air-slaked lime should be kept near the latrine, and at least once a day some of it should be sprinkled generously in the pit. In the absence of lime loose earth should be thrown in.

Camp garbage should be burned or buried. If burning is resorted to, a permanent fireplace of stones, built for the purpose, will be found a convenience. No bones or other refuse should be thrown upon the camp ground or in the vicinity of the camp.

Refuse draws flies, and flies are dangerous to health.

The essentials to a good camp, as enumerated by Mr. E. M. Robinson, International Secretary of the Y. M. C. A. for Boys' Work, are as follows:

1. Good water for drinking, cooking, and washing.

2. A body of water for fishing, boating, swiming, bathing, and going about.

3. A wooded tract for roaming, hunting, for shade, for wood construction.

4. An open field for games and sun drying.

5. Sleeping accommodations: tents, a log cabin, deserted house, under a boat.

6. Good drainage for tents, for sanitary purposes.

7. Good outlook, scenery.

8. Seclusion which allows a free dress and manner of living.

9. An agreeable personnel.
10. Discipline, allotment of labor and privilege, freedom.
11. Good climatic conditions.
12. Camp-fire.
13. Abundance of good food.
14. Suitable clothing to rough it and be comfortable.
15. Communication with civilization.
16. Being away from home and home habits.
17. Abundant activity and great quantities of rest.
18. New things of interest to claim the attention.