

## HOUSEHOLD INVENTIONS.

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### Household Inventions.

It is within relatively a few years that inventions to be used in the home have received any important consideration.

Comparing the household with other industries it has been obviously belated in labor-saving devices. Farming has been made more successful by science and invention; the life of the agriculturist has been changed from that of drudgery to one of progressive enterprise, and "the evolutions and revolutions in commerce and manufactures are truly marvelous".

It is true that much work has gone out of the house to be done by machines at the factory. However until about the middle of the nineteenth century the housewife had to do her own spinning, weaving and dyeing and each girl of the family had to weave the linen for her future use.

As the kitchen is the room in which the woman of the house spends a large portion of her time, it is a room worthy of careful consideration. "While the parlor is the crown of the home, the kitchen is the heart". "As the heart by its ceaseless throbbing sends the streams of life through every part of the human system carrying disease or health, so the influence from the kitchen brings to the entire household weal or woe".

The first kitchen of which we have record was that of the savages. It was the forest with a mat of leaves for a floor and the sky as a roof. The usual modes of cooking were either by placing the victuals in the ashes, on heated stones, or by braising them on sticks over the fire, while the few utensils used were of the crudest handmolded pottery.

The Egyptian kitchen was a large circular room which was used for all purposes. In the center of the room was built a large

fireplace and as there was no chimney the smoke had to escape through any outlet that it could penetrate.

To appreciate the kitchen of today let us go back to the time of our grandmothers, when the kitchen served also for dining and sitting-room. We all know of the old colonial kitchen with its large fireplace, above which was the mantle that held the home-made tallow candle and the flint stones. Near to the fireplace was the brick oven three or four feet from the floor and large enough to hold from eight to twelve good sized loaves of bread. Across the top of the room were long poles on which hung strings of peppers, dried apples and rings of dried pumpkins. Although the utensils were few and of pewter, copper, iron and brass, grandmother prized them. The great brass and copper kettles often held fifteen gallons and the vast iron pots "Desired and beloved by every colonist" sometimes weighed forty pounds. A characteristic of the utensils was that they were all set up from the fire on slender, yet strong legs, also the waffle-irons and toast forks had long adjustable handles. Before the swinging cranes were used, an iron bar known as the lug-pole rested on projecting inner ledges of the fireplace; attached to this were iron chains and hooks on which the pots and kettles could be hung over the fire.

When our mothers began housekeeping, the kitchen was still large. The fireplace was replaced by a cook stove that had four lids and an oven with a door on each side. The bench on which the water bucket and wash dish used to sit was replaced by the wooden sink under which were built cupboards, making a dark, moist place for unhealthy germs and the disturbing cockroach to locate. The utensils began to increase in number and to decrease in weight; in many homes porcelain pots took the place of those of iron. The tin steam cooker was used for steaming foods, and fruits were often

cooked in it after which they were placed in tin cans or stone jars and sealed with home-made sealing wax.

Within the last twenty-five years the kitchen has been greatly improved. The range has taken the place of the stove, this contains as many as six lids, the oven opens upon but one side, and when down the door serves as a shelf. The fire-box is oblong and rather deep so as to hold a good body of coal, and the grate is reversible so that coal or wood may be used. Often above the stove is placed an iron hood connected with the chimney which will carry off odors that are present in every kitchen; or a register in the chimney answers the same purpose.

The range can be made to heat water for the use of the whole house. In this case the front fire-bricks and often the side linings are replaced by a flattened box of cast-iron, known as the water front through which all the water circulates and is heated. Holes are provided in the side of the stove through which pass the pipes connecting the water front with the reservoir in which the water heated in the stove is stored for use.

The gasoline stove was a welcome invention of comparatively recent date. By its use during the summer months much of the heat of cooking has been dispensed with. The stove has an oven which may be placed over the burners when baking is to be done and when not in use it may be set out of the way.

The Atkinson cooker is an oven made of thick non-conducting material lined with tin and containing two or more perforated shelves. An oil or gas lamp or electricity may furnish the heat and there is no danger of burning food as the source of heat is removed as soon as the oven reaches the desired temperature.

The cooking utensils of today have been improved and are

more numerous than of former years. They are principally of agate, granite, steel, tin or aluminum. Coffee and tea pots can be obtained so made that water may filter through the beverage; cake tins may be taken apart and easily cleaned. Wire baskets used in frying, double boilers, different sizes of stew pans and any number of cooking tools are in use. The glass rolling pin and measuring cups although trifles are useful. The wooden chopping-bowl that could not be considered healthful has been replaced by the meat grinder which not only gives a quicker method of getting the same result, but it also may be used to grind bread crumbs and nuts. As the grinder may be taken apart it is easily washed. Egg beaters, cream whips, potato ricers, lemon reamers and the various molds are acceptable in every kitchen.

Many are the kitchen conveniences constantly coming into use.

The faucet hook is a useful article to hold a pail or tea-kettle while being filled. The milk bottle holder is a device made of strong tinned wire just the size to hold the bottle. This can be screwed in place where it will be convenient for the milkman and yet where nothing can interfere with it.

A large amount of our fruit is now boiled in the jars as better results are obtained. When the cans are hot, heavy and slippery it is difficult to lift them from the kettle. A fruit jar holder is now made of wire tinned to prevent rusting and large enough to hold the two quart cans as well as the smaller ones. The can filled with fruit is set in this holder and set in the boiling water. When ready to remove it is only necessary to lift the holder out by its long handle.

The paring machine, fruit seeder, dish washing machine,

bread mixer and raiser all give better results with less work than the old methods of hand work. The cooking thermometer and scales are now considered indispensable articles in the scientific kitchen.

A useful piece of furniture is the kitchen cabinet. This is a work table where all of the materials are at hand. Some of the cabinets have a cupboard above for kitchen dishes, below is the mixing board which may be drawn out for use; there are also various sizes of drawers for flour, sugar, spices etc. Another adaptable arrangement is a kitchen table containing several drawers and above attached to the wall are placed the cans for different kinds of flour and at the bottom of each is a small drawer to hold the flour that is sifted from the can.

For anyone who wishes the work table out in the room, a table with drawers on all sides is convenient.

Spices and groceries are no longer kept in paper packages, instead labeled boxes of tin, wood or porcelain are used. The spice cabinet is made to hang on the wall. It contains little drawers labeled so that each article can be readily selected.

The refrigerator is an ornamental as well as a useful piece of furniture which in most households could not be dispensed with. The lining and shelves are of some material easily kept clean, the best being lined with opal plate glass. A compartment for the ice keeps the moisture from the food and the water is drained away as fast as the ice melts.

An invention that has proved a useful convenience is the pipes for carrying hot and cold water to various parts of the house. The unhealthy wooden sink has been replaced by either galvanized iron, enameled iron, soapstone or solid earthenware, each of these having its advantages, but in most respects the

solid earthenware sinks have been considered best. A drain board of metal or corrugated wood attached slightly slanted at one end of the sink is useful for draining the dishes upon; or still better, a wire tray may be placed over part of the sink and thus the rinsing water will drain well from the dishes. The sink is provided with a strainer to prevent solid particles from entering the pipes, also a tin or wire strainer may be kept at the sink so the water may be poured through this and the solid material emptied into the garbage pail. A pantry sink is useful. This may be made of the same material as the kitchen sink and it is usually provided with a plug to retain the water.

The plumbing fixtures are no longer concealed by cupboards, instead the fixtures are exposed so leaks can easily be detected and repaired.

A still later improvement is the piping of soft water for household uses. A reservoir may be placed in one of the upper rooms or attic, and connections made with the eaves so that the water will run into the reservoir, or the water may be drawn from the cistern by means of a water motor.

Where natural gas can be obtained cheaply it has largely taken the place of the wood and coal. The gas is piped into the house and any stove may be used if a special grate is put into it. The use of natural gas for cooking is inexpensive and it saves carrying fuel, prevents dust and dirt and unnecessary heat in the kitchen.

Undoubtedly the greatest conveniences that have ever been employed in the household are those produced by the application of electricity. Although electricity was first introduced into the household by the electric bell early in the nineteenth century, this was the only convenience it afforded in the home until

within the last twenty-five years.

One of the latest and most important uses of the heating power of the electric current is its application to cookery. A soapstone or metal slab with switch board and wires attached above take the place of the stove or range. All of the cooking utensils are connected to the circuit through the switch board above the slab. When one wishes to use a utensil to cook something in, it is only necessary to insert the plug switch of the connecting wire in the receptacle provided for it in the utensil, "press the button" and the cooking begins.

There is a coil of German silver wire imbedded in cement below each utensil and with a metal plate above. As this metal is not a good conductor of electricity the efforts of the current to pass through it produces friction of the fluid on the wire making the heat required. As this heat is brought directly into the base of the utensils all heat generated is utilized so practically none escapes into the room to make it uncomfortable.

The electric oven shown at the St. Louis Exposition was made of Russian iron, lined with wood and asbestos to prevent radiation. The heating plates were arranged so the heat could be applied either from above or below or both at the same time, and the heat could be controlled by an outside switch. The door of some of the ovens was of glass and an electric lamp lighted the oven so observations could be made of the cooking.

By means of an electric clock the current may be turned on or off. If it is necessary to leave the house while the bread is still in the oven, the clock may be set at the time the current should be turned off. Or if there is some shop-



ing to be done before it is time to put some article on to cook and if the food is one that can stand without spoiling, it may be placed on the electrical stove and the clock turned to the time the material should begin to cook.

It is said that in some places where electrical cookery is a reality, a switch board has been placed in the bedroom so that a breakfast dish may be prepared the night before, connections made and the switch turned on from the bedroom, the breakfast being started before the family get up in the morning.

An electrical kitchen saves time consumed in attending to the fires, the wood box is unnecessary, dirt and dust are avoided and the overheated kitchen is prevented. Even the refrigerator may be kept in the same room as the amount of heat that escapes into the room has but little effect upon the temperature.

We are told that all that interferes with the use of electricity for cooking purposes is the question of cost. Although it seems to be more expensive, from the standpoint of energy utilized it is vastly more economical as less heat is required owing to its being more readily localized and directly applied. We are so accustomed to the waste of solid fuel that we do not realize how much heat is generated that is not used. The range requires as much as twenty times the fuel that should be needed, as ninety-five per cent is not applied to the preparation of the food. A very large proportion of heat generated by gas is wasted while even the most improved oil stove wastes more heat than the electrical stove. Methods have been devised that save eighty to ninety per cent of the electrical heat units and in some instances but five per cent is wasted. The cost of generating is what interferes with the general introduction of the electrical cooking apparatus. "Broadly speaking the cost of the ordinary con-

sumer of electricity for cooking ranges from eight to fifteen cents per kilo-watt-hour. At Niagara Falls the current is generated so cheaply that at some places it is obtained as low as four cents. It is not improbable that there are other places where water power is available to generate the current as cheaply so that soon in such vicinities electricity will be used as fuel. With the development of the long distance transmission lines we may expect that the housewife will be cooking with the electric current many miles from the place of its origin".

With the general introduction of electricity it is not unreasonable to expect that a large part of the work will be done by its power; egg-beaters, cream-whips, ice-cream freezers and dish-washers will be run by its power. In other words "Electricity will be a willing slave to almost any household drudgery".

The modern house now contains a well furnished bath-room. Those who have money to spend here have tiled floors and walls, or the still more expensive room is furnished with tiled walls and a marble floor. The essentials for the bath-room are the bath-tub, lavatory, soap and sponge dishes, towel racks and the water-closet with an abundant supply of water.

The best tubs are of glazed earthenware or porcelain. The inside water-closet has not only proved a household convenience but the best ones are far more sanitary than the outside closets. The wash-down closet is the improved form, the water entering this from all sides cleanses it thoroughly.

In the average house the laundry work is done in the kitchen. The worker realizes the inconvenience of such an arrangement for as soon as the weather will permit the tubs are removed to the rear porch or back yard. Some have a separate wood or wash house while others find it possible to have a room finished off in the cellar

or basement for this purpose.

The floor of the laundry is best made of some material that will not become water-soaked. Cement is commonly used and the water is drained away by pipes connected with the sewer. The walls and ceiling are also finished in some material that is not penetrated by steam.

The well furnished laundry contains at least two laundry tubs; They are of various materials as wood lined with sheet lead, enamelled or galvanized cast-iron, cement stone, slate, soap-stone or earthenware. The tubs are fitted with a plug and chain to hold the water, and the hot and cold water pipes are connected with the tubs so that carrying of water is avoided. The laundry may also be fitted with a wash-boiler set in brick work and arranged with a flue, feeding-door and grate. Although the washing-machine has been in use for years it has been improved until quite satisfactory machines can be obtained. No doubt when electricity comes into general use the washing-machine will be run by its power. The wash-boards also have been improved, the wooden boards were probably first used, then the metal boards were in use many years and are still used by some but those made of glass are now considered best.

The same room may be used for ironing if it is large enough. The flat-irons, ironing board, laundry stove and clothes bars are some of the necessities on ironing day. Irons heated by electricity are now in use although not extensively but likely they will no longer be a luxury within a few years.

The original way of washing was to go into the creek and pound the clothes between smooth stones. This is still the practise among Hawaiians. Later tubs were invented and the garments were trod upon until clean. Before irons were used the garments were folded and placed in a press.

Many homes are now fitted with a room for dining room purposes. The housewife has many more and also prettier dishes. The Haviland china, cut glass, silver and also hand painted dishes adorn our china closets and side-boards.

The china closet may be built in the wall or bought and placed in the room. It is often built in the wall between the kitchen and dining-room. The lower shelf is wider than the rest and is not enclosed by doors on the dining-room side. Dishes of food from the kitchen may be placed on this shelf and then taken from there to the table. Below the shelves is room for several drawers for table-linen.

Passing to the parlor we find its improvements. The piano and other musical instruments now common are ornaments and also useful pieces of furniture. The music cabinet is another convenience worthy of mention.

A large hall also used for a reception room is no longer uncommon with its hat-tree, umbrella stand, hall-seat, table and comfortable chairs.

The bed-rooms of today are more comfortably and healthfully furnished. When it is necessary for two people to occupy a room, single beds can be obtained. The newest beds are of dainty enameled iron. Different kinds of mattresses, for example hair, felt or excelsior, now take the place of the straw mattresses and feather beds that are nearly out of use.

Nailed down carpets are rapidly going out of use and the much more sanitary art-squares and rugs are now in use; These can be removed easily and cleaned. The carpet-moth is no longer common in every household as the border of the room is good flooring finished in some hard finish that is readily cleaned.

The dust-mop and the carpet-sweeper are recent inventions. The carpet-sweeper consists of a revolving brush enclosed in a wooden dust-pan. Its advantage in addition to its great ease in operation, is that it picks up and confines the dust as it is gathered.

The means of heating our houses have been greatly improved. The large open fire-places were once used for heating rooms as well as for cooking purposes. We still have the open grates but they are used as a source of pleasure. The heating stoves replaced the large grates, the round-oak, air-tight and base-burner have all had their day, and now the hot air furnaces, hot water and steam heat are rapidly putting these out of use. The newer methods of heating have many advantages; they save work and time consumed in attending to several fires and the fuel dust and dirt are avoided.

Still another use for the electric current is for electrical heating. Although it cannot as yet be afforded by many, where it is used it is giving satisfaction. The electrical radiator resembles in appearance an ordinary steam or hot water radiator. There are also electric heaters similar to our stoves.

There have been various methods of lighting the home. The candle was one of the first means and it was perhaps the most defective as the light was dim and flickering. Perhaps nothing has contributed more to woman's comfort than the invention of oil-lamps which have been in use for many years and are still a common means of lighting although better means are fast eliminating them from use. The gas light is a later method. This because of its being more convenient than oil is certain to be used despite its danger. However the electric light is much safer and better than any other artificial light. It does not give off any or very little of the

poisonous gases and the color of the light is more nearly that of day-light.

In the structure of houses, arrangements are now often made for inlets and outlets of air. The sherringham valve consists of an iron box placed within the wall, the front turned toward the room and so constructed with a door that it may be opened or closed. Another method is the Tobin ventilator, consisting of horizontal tubes passing through the walls, The outer ends open to the air and the inner ends enter the room where they are joined by vertical tubes carried up at least five feet from the floor, thus the outside air enters upwardly into the room.

Double acting doors, windows with weights, dumb-waiters, door-bells, call-bells, telephones, burglar alarms and temperature regulators are all of advantage in the private house. The call-bell may be so fixed that when it is rung, the room from which the call came may be indicated. This is a useful fixture near the sick bed as the patient can easily call someone when necessary. A rather new arrangement for the call-bell is to have it attached to the floor where the hostess sits at the table, then by placing her foot upon it, she may call a waiter and the guests are not aware of it.

The use of the burglar alarm adds greatly to the security of the the home. Every door and window through which entrance might be made, is fitted with an electrical apparatus which sets an alarm bell in operation at the least disturbance. By means of a switch the battery may be cut off during the day.

If household conveniences increase as rapidly within the next quarter of a century as they have in the last twenty-five years there will be no need of any housewife leading a life of drudgery, instead it will be one of progressive enterprise.

No doubt electricity will receive much attention and methods will be devised by which the current can be generated cheaply. "It is strange that a power so rich in its resources so universal in its application and so readily controlled as electricity was not earlier introduced into the home".

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