

Hygienic Disposal of Household Wastes.
Fanny Reynolds.

Hygienic Disposal of Household Wastes.

I. Importance.

1. Composition.
2. Contagion.

II. Classes.

1. Refuse.

- a. Definition.
- b. Composition.
- c. Origin.
- d. Collection and disposal.

2. Garbage.

- a. Definition.
- b. Origin and composition.
- c. Danger.
- d. Collection and disposal.

3. Sewage.

- a. Special importance.
- b. Disposal
 - a. Apparatus.
 - b. Utilization.

The hygienic disposal of household wastes is one of the greatest problems of the day. Inasmuch as they contain all of the excretions of the body and also garbage and refuse, and inasmuch as they may contain infectious material, the safe and proper disposal of wastes is one of the first necessities of hygienic living.

The health of the communities depends largely upon the disposal of the refuse matter. Death rates have been permanently lowered since the introduction of even fairly efficient disposal of wastes. The dumping of refuse upon vacant lots or around houses always leads to disease. Birds, animals, flies, and mosquitoes may become the carriers of disease.

The wastes are divided into three great classes. First, refuse, as ashes, dust, paper, rags and bottles. Second, garbage, scraps of food and kitchen slops. Third, sewage, human excreta and bath and toilet water.

The refuse in many households is disposed of by burning. The bacter says "Dust is fine dry particles of earth or other matter so attenuated that it may be raised and wafted by the wind." The dust we sweep from our floors may consist of small fragments of sand, fine hair, fibres of cloth, ashes, and other pulverized matter to which may be attached unnumerable micro-organisms. Dust is rich in bacteria and frequently contains pathological bacteria. There is but little doubt that infectious diseases are frequently transmitted by it so that it must always be regarded a possible source of disease. It often contains virulent disease germs such as tuberculosis, diphtheria, small-pox, scarlet fever and measles and to a less extent germs of typhoid fever and other diarrhoeal diseases. There are three great cleansing agents found out doors that are not found in the house, namely wind, sun-shine, air, and frequent wetting. Rain carries the dust and germs into the sewer.

and rivers and down into the soil where other micro-organisms destroy them. In houses the dust settles on furniture, shelves, pictures, and draperies. It is not necessary in this to find out how all of the dust reaches the interior of the house but to find out the best way of preventing or disposing of it. Dust may be blown in through open windows or carried in on clothing. Fibrous dust is produced by the wear of carpets and rugs. In order to clean a room in the most hygienic way we should take the rugs out doors and also all draperies, the windows should be raised, walls should be wiped with cloths, and the floor should be wiped up; all furniture should be dusted with a damp cloth and wood-work and windows washed. If carpets are used, before sweeping they should be sprinkled with coarse salt, salt and bran or damp sea-grounds and in this way the dust is kept from rising. We all know from ex-

sonal experiences that if we sweep without using these precautions the dust rises in the air causes a choking sensation. It rises in the air and resettles upon other portions of the floor and upon walls etc. etc. In the nursery or sick-room the floor should be bare and should be frequently wiped up with some antiseptic. The final disposal of the dust should be by burning which will kill all disease germs.

The second factor is garbage. The term garbage in some of the southern states is applied to dry refuse or a mixture with vegetable or animal wastes. By some the word "swill" by others the word "slop" is used to designate kitchen wastes. By garbage is usually meant the solid organic wastes of the kitchen, the more liquid wastes being discharged through the sink pipes into the sewer. The quicker garbage is disposed of the better. There is little objection of disposing it by feeding it to swine. In warm

weather this garbage should be collected daily while in cold weather every other day is sufficient. It should be collected in water tight receptacles and should be well covered so as to prevent pollution of the air or soil and to keep it from the flies which would spread the noxious material. The garbage may be disposed of in many ways as cremation, dumping into the sea or rivers, and by feeding to animals, and by burying. Much garbage is burned in the kitchen stove without drying, much more may be dried and then burned in special grates in certain stoves being provided for this purpose. By either method, burning involves much inconvenience and is likely to produce disagreeable odors. Some of the objections to dumping into the sea, when the sea is under favorable conditions of winds, tides, and currents, are that much material may be washed ashore

and become a nuisance and eye sore. In the country and suburban districts, much of the kitchen waste can be disposed of by feeding in a fresh and sweet condition to swine and poultry and the remainder by burning or burying in the soil. If buried in the earth, it should be covered only a few inches as decomposition occurs rapidly near the surface and the soil is sufficient to prevent contamination of the atmosphere. Liquid wastes can be used to a great advantage for watering gardens. Buckets may be kept for this purpose and emptied daily or a kitchen drain may empty into a small cistern constructed for this purpose, from which the water may be drawn for the garden when convenient. It may also be conducted to irrigation ditches. One objection to burying might be that it leaves the soil in a good condition for the growth of disease

germs.

The third class sewage is the most important consisting as it does of the solid and liquid excreta of the body, wash-water, laundry-water, skin-water, bath-water, and water from the kitchen. It also is a possible factor in the production of disease.

The gases from sewers must be kept out of the house. In well ventilated sewers they are probably not as dangerous as has been supposed but are in any case unpleasant. They contain but few living organisms but are rich in carbon dioxide, hydrogen sulphid, ammonia, and other gases produced by decay. The sewage should be removed from the premises as soon as possible and always before decomposition begins. If the drainage is so empty into a cess-pool, it should be well trapped and ventilated. A cess-pool should never empty into a sewer because it is one of the best places for the

growth of bacteria. It is thought that many disease germs grow and multiply in the cess-pool. Country dwellings and small towns have a wide field for the disposal of their wastes than do cities. They may have discharge into the sea or other bodies of water, pail system, chemical treatment, irrigation, filtration, or cess-pool. If cess-pools are used they should be made of brick and stone and then cemented. A cess-pool made in this fashion will require emptying often and one of the best ways of doing this is by having an overflow pipe leading to some place where the overflow can be utilized and in this way the subsoil will not be polluted, or it could be drained to a forest or thicket and there be used as a fertilizer. Cess-pools should be as far as possible from the house and lower than the house so that the drain will have a good fall. One of the

first things to be considered is the
 ventilation of the cess-pool. Whether
 there is a profit of not using
 sewage for irrigation, this
 should be kept in the back-ground
 and the primary object ever in
 view. Its use for irrigation should be
 under supervision of municipal
 authority to insure public good
 and not private gain. So far sewage
 irrigation has not been responsible
 for occurrence of extensive out-breaks
 of typhoid fever, cholera, or dysentery.
 A case has been reported of an out-
 break of typhoid fever which was
 thought to be due to vegetables from
 a garden watered with the contents
 of an infected cess-pool. No such
 out-breaks have been due to pro-
 ducts from a large farm. If the
 contents of the cess-pool is used
 for irrigating gardens all vegetables
 that grow in the garden should be
 thoroughly cooked before eating.
 A pail system is both economical
 and healthful if properly kept
 clean and ventilated. If the

pail system is used, loam and clay should always be kept at hand to throw on the dejecta after the pail-closet is used. Sifted ashes or sand and dirt will answer the purpose. When the pail system is used, it is best to have the house slops, wash-water, laundry-water, and bath-water carried by a drainage system to the garden, this way being both hygienic and economical. If the sewage is disposed of by chemical treatment, it should be treated in as fresh condition as possible and before putrefactive processes begin. Some of the substances most used as precipitants are lime, ferrous sulphate, and alum. Even with the greatest care and at high cost, the filtrate cannot be obtained sufficiently pure to be turned into a water-course.

The discharge of sewage into the sea or other bodies of water may be an easy method but the communities farther down may suffer

from it if the stream is used as a public water supply. If the water below is to be used for public use, the process of purification should give good results.

The soil-pipe is the pipe that is used to receive the sewage from the closets and from waste-pipes as lavatories, bath-tubs, and sinks. This pipe is best made of cast iron about four inches in diameter. The size of the pipe depends upon the amount of work it has to perform. There must also be a pipe connected with this going to the top of the house for ventilation. This pipe must be at least fifteen feet from any window. It can be covered with a wire basket to keep foreign material from entering. The soil-pipe should always have roundelbows, whenever two pipes meet and all joints must be gas tight. These pipes should be uncovered so they can be inspected or repaired at any time. If it

is necessary to hide them they should be made of extra heavy material. A trap consists of a water-seal in the pipe. The pipe is bent in an S shape and is filled with water so as to prevent the entrance of sewer or drain air into the house. The trap used should be simple. The seal of the trap should be deep enough as otherwise in case of a rush of water it might be broken. Each pipe from the different fixtures in the house should have a trap just below them. If the pipes are carried down into the cellar, they should be well supported at each joint and strongly attached to the ceiling or they may have a good brick foundation built up under them and cemented.

In considering household waste disposal, it should be born in mind that it is a positive public necessity as much as fire patrol; it costs money and it cannot be a source of income over

expenditure. No community expects returns for revolvers, fire engines, horse-carriages, or police stations, but These things are needed for protection of life and property, so a hygienic system for the disposal of household wastes is necessary for the protection of health and must not be treated as a source of public revenue.