First Aid for Flooded Homes and Farms

UNITED STATES DEPARTMENT OF AGRICULTURE

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HELP WHEN NEEDED

FLOODS have always plagued mankind. Modern farms are particularly vulnerable, and no effort should be spared to protect and rehabilitate them. In 1937, floods in the Mississippi Valley cost 225 lives and destroyed or damaged 500,000 homes. More recent floods, such as those in the Kaw and Missouri River Valleys, took their toll in lives, and cost billions in crops and livestock destroyed, buildings ruined, and land resources lost.

To those who are returning to homes and farms that have been flooded—to clear and rebuild and try to retrieve their losses—it is hoped that this booklet will bring important help. Bureaus of the United States Department of Agriculture and those State agricultural colleges experienced in rehabilitation work following floods have contributed information. Suggestions by the United States Public Health Service and other Federal agencies, the American Red Cross, and safety organizations are also included.

To cover a wide range of needs, the information is necessarily brief and limited to basic principles. Good judgment applied on the ground will modify some of the recommendations. Instructions from those in charge of relief and recovery work will take precedence over them. The reader should consult county agricultural agents, home demonstration agents, and local officials for more specific information and help.

COVER ILLUSTRATION: *Owner and Farmers Home Administration supervisor plan rehabilitation of flood-wrecked home.*

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FIRST AID FOR FLOODED HOMES AND FARMS

Prepared by the United States Department of Agriculture

THE HOUSE

ENTERING DAMAGED BUILDING

Before you enter a building, make sure it is safe and not about to collapse. Let your house air for several minutes to remove foul odors or escaped gas. Do not smoke or use open flame until you are sure that it is safe to do so. On going in, bear in mind there may be holes in the floor or loose boards with nails sticking up. After dark use a flashlight, to avoid igniting escaped gas. Do not turn on an electrical system; it may have become short-circuited. Turn off gas at meter or tank.

All doors and windows that have been submerged will be swollen tight. When entrance must be made by force because of swollen doors, accumulated mud, or bulged floors, enter by a window or other opening, and then remove the pins of the door hinges by lifting them with a screw driver and a hammer. Be careful not to break cast-iron hinges. Be sure the door is unlocked and then push it in from the outside, trying not to damage it.

Look for loose plaster ready to fall from the ceiling, and break it down with a stick before moving around in the building. Wet plaster is heavy and is dangerous if loose. Watch for more loose plaster as the house dries out.

DRYING AND CLEANING

Open all doors and windows to dry out the house, since both air and heat are essential. If windows are swelled so that they cannot be raised, take off the small strip that holds in the lower sash (use a chisel carefully to avoid marring woodwork), force the sash up slightly, and remove it from the frame by pushing it from the outside into the hands of a helper. Be careful not to break the glass.

Examine foundation and basement walls to make certain that they have not been undermined. If walls show evidence of settling or cracking, it may be necessary to dig down to the footings and reinforce or replace any sections that have settled. Filling under footings that have been undermined should be done with masonry or concrete, never with earth or gravel. Piers that have tilted or settled may need to be replaced. If the building is out of plumb or if the floors have settled or bulged, make sure that the foundation is sound and that the framing, such as sills, girders, and joists is free from termite damage before renovating. If the building has to be moved, expert help should be called in unless the structure is a simple one.

Directions for repairing defects in foundations are given in detail in Farmers' Bulletins 1772, Use of Concrete on the Farm; and 1869, Foundations for Farm Buildings. In making repairs, damaged wood should be replaced with sound wood. Farmers' Bulletin 1993, Decay and Termite Damage in Houses, makes suggestions for ventilation, protective construction, and use of treated timber in places where it is

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most difficult to keep wood protected from moisture.

Basements should be drained and cleaned as soon as the building is found to be safe. Pump or bail the water from the cellar and shovel out the mud while it is moist, to give basement floors and walls an opportunity to dry. Remove the mud from the furnace, flues, and smoke pipe. Detailed directions for cleaning main-floor rooms are given on pages 8–9.

No rush to move in.—The house should be clean and dry before any attempt is made to live in it. The premises should be drained of all remaining pools of water. Driftwood, rubbish, and decaying vegetation left in the yard should be removed, burned, or buried. If the house or porches rest on open foundations, take care to see before you attempt to remove debris from underneath that there is no danger of the structures collapsing. Walks and fences damaged by floodwaters are also a hazard until replaced or repaired.

If conditions are such that these things cannot be done, the situation should be reported at once to the county agricultural extension agent or the home demonstration agent. They may be able to obtain assistance from the Red Cross or other agencies. Family and community health must be guarded for the good of all.

ELECTRIC CIRCUITS

Do not turn on lights or appliances until the whole system has been checked by an electrician for short circuits. **Wear rubber-soled shoes or boots and rubber gloves.** Turn off main switch for each building or at the yard pole, being care-

Three tractors pulling irrigation plow through a field in Missouri River bottom on restoration work where sand was deposited during flood in July 1951. Width of furrow between 30 and 36 inches. This plow easily cuts into the ground 30 inches. Some of the black dirt being plowed up from under the layer of sand can be seen mixed in with the sand and 6-foot clods. [*Courtesy Missouri Extension Service.*]

Missouri River overflow in 1951 ruined thousands of farms, some of which are shown in this view from the air.

ful to stand on a dry board, and avoid touching metal handle of switch box by using a piece of rubber, plastic, or dry wood. Water is likely to have gotten into conduits, connection boxes, etc., and dampness or exposed wires can cause short circuits and fires or even electrocute a person replacing fuses, especially if he stands on a wet surface.

If sump pump is available and needed, remove all fuses except the main fuses and the one controlling the sump pump; then carefully turn on the main switch to see if the pump will operate. See section on "Cleaning Electric Generators and Motors," pages 19–21.

THE HEATING SYSTEM

Before starting a fire in a **hot-air heating plant,** examine the inside of the heater and wash the sediment from the flues with a hose or a swab on a long stick. The flues can generally be reached through the clean-out doors above the fire door. If the heater is jacketed, clean out all mud between the stove and the outside casing. It may be necessary to remove the casing. If the flues or passages are choked with mud, the heater may burst when a fire is started. Take the smoke pipe out of the chimney, and reach through the thimble to remove any mud from the lower part of the chimney flue, to be sure there will be a draft for the fire and to avoid smoking up the house.

In oil-burning systems, the storage tank should be inspected by an experienced person to make sure seams have not been opened, allowing water and dirt to enter. The burner should be dismantled and all parts cleaned in kerosene and wiped dry. The air blower and fuel pump should receive atten-

tion. Housings enclosing gears should be removed and gears thoroughly cleaned with kerosene. Any grit left in gears will cause undue wear.

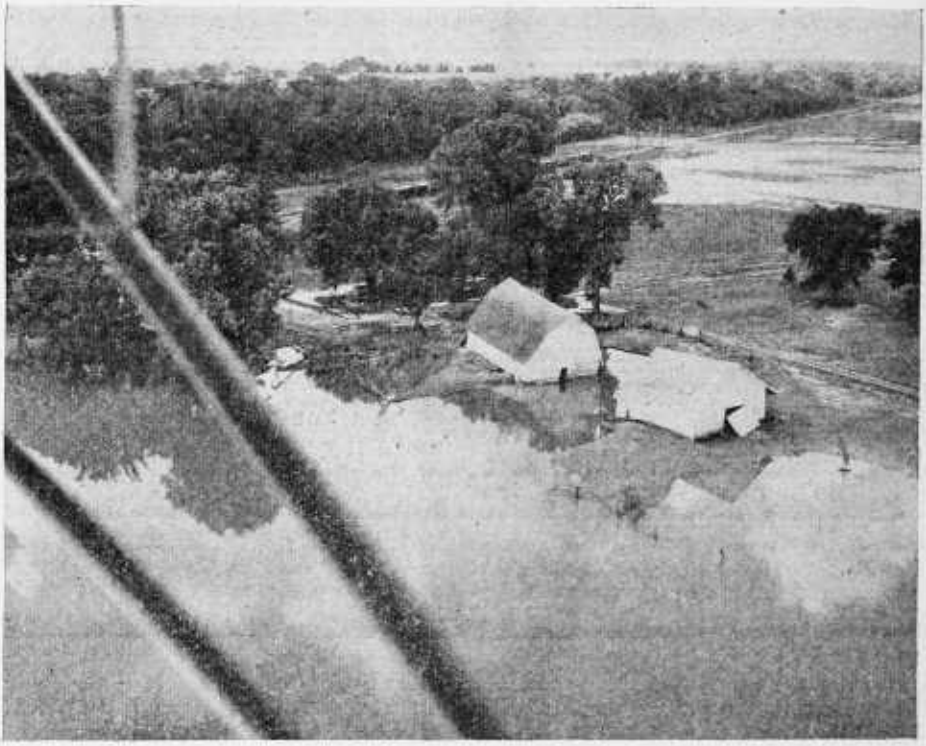
Small electric motors may be dried out in an oven at not more than 150° F. Take them out after 6 or 8 hours and test them. Then, if there is still evidence of grounding or short-circuiting they should be returned to the oven for 2 to 4 hours, and tested again. See also section on "Cleaning Electric Generator and Motors," pages 19–21.

Be sure of the chimney

Any chimney that has been subjected to water action should be inspected, and if mortar in the joints between the bricks has disintegrated, it should be repointed with masonry cement. If the chimney has settled badly or broken where it passes through floors or roof, it may need to be rebuilt before being used. Most chimneys rest on a footing in the ground. If there is evidence of settling or tilting of the chimney, the first step is to examine the footing to see whether or not it has been undermined. The cleaning and repairing of flues and chimneys are discussed in Farmers' Bulletin 1889, Fireplaces and Chimneys. Types of heating systems are described in Miscellaneous Publication 689, Your Farmhouse-Heating.

WATER SUPPLIES, PLUMBING, AND SANITATION

Provision for a safe supply of drinking water and sanitary disposal of sewage are most important. The United States Public Health Service regards these among the



Buildings wrecked, fields covered with sand, many fine farms will have to be rebuilt, where rebuilding is possible.

most important items in safeguarding the health of the family. Before drinking any water from the well, have the county health authorities inspect it. They can give directions for any treatment necessary. The individual is not equipped to test water or clean wells. This is best done by two, or better three, mobile crews properly equipped, the first to test water and seal contaminated supplies, the second to clean the wells, the third to test the cleaned wells and give a clean bill of health.

Pending examination of the water supply, the householder should employ one of the four following methods of disinfection as a temporary precaution against disease:

1. Boil water for 5 minutes after bubbles are observable on the surface of the water. This is a safe method but inconvenient for large quantities. Vigorous boiling of water for at least 1 or 2 minutes will provide satisfactory disinfection.

2. Use chlorine tablets. This is simple and convenient. The tablets may be obtained from drug stores, and should be used in strict accordance with the directions supplied. The flavor of chlorine will disappear from the water unless more chlorine is added. Boiling the water will largely remove this flavor. Chlorinated water will not affect the keeping quality of canned food, but it may destroy some of the natural color, making the vegetables or fruit paler when cooked in it.

3. Use bleaching powder (so-called chloride of lime). Dissolve 1 teaspoonful of fresh bleaching powder in 1 quart of water, and keep this solution in a stoppered bottle. Mix thoroughly 1 teaspoonful of this solution with 2 gallons of water; after 30 minutes the water usually will be fit to drink. Fresh solutions should be made up occasionally, as they gradually lose strength.

4. Use tincture of iodine, which is an excellent disinfectant for drinking water. Mix 1 drop of this tincture, which is 7 percent iodine, thoroughly with 1 quart of water. The water so treated usually will be safe for drinking after 30 minutes. For larger quantities of water use 11 drops of tincture in 2¾ gallons (an ordinary pailful), or 1 tablespoonful in 52 gallons (a large barrel). For small quantities of drinking water you may use a preparation such as Halazone. Drug stores usually carry several kinds of safe disinfectants, either in tabular form or in solution. Directions on the containers should be followed strictly.

The cleaning of wells and the disinfection of drinking water are discussed in Farmers' Bulletin 1978, Safe Water for the Farm.

Extra precautions with water

The United States Public Health Service, Division of Sanitation, recommends boiling as the most positive means by which water may be made safe to drink. Chemical treatment, done with care, will also make water safe from bacterial contamination, but neither method will eliminate chemical pollution that may be present. Boiling should last for 5 minutes from the time bubbles are observed on the surface of the water. If there is danger of amoebic cysts and certain parasites, only boiling should be relied upon.

Coffee and tea are safe only when made with water that has been boiled at least 5 minutes. Water used for brushing teeth or washing tooth brushes requires the same treatment as drinking water. Further information on safe water is given in Drinking Water Disinfection (mimeograph), also Public Health Bulletin 296, Manual of

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Recommended Water - Sanitation Practice, by the Public Health Service, Division of Sanitation, of the Federal Security Agency. Another useful booklet is Public Health Service Publication No. 24, Individual Water Supply Systems, containing the recommendations of the Joint Committee on Rural Sanitation.

Care of plumbing

Test drains of plumbing fixtures, water closets, and basement drains by pouring in a bucket of water. If they are clear of obstruction, the water will run away. If they are stopped up, remove the clean-out plug from the trap (a U-, P-, or S-shaped pipe will be found under most such fixtures), and rake out the mud with a wire. Water-closet and drain traps can be cleaned with water and a swab, or by rodding with a plumber's "snake" or sometimes with a wire.

The repair of clogged pipes is discussed in Farmers' Bulletin 1460, Simple Plumbing Repairs in the Home.

Many privies will have been washed away by floodwaters and others will be so wrecked that they should be replaced. Before building a new one, consult the local health authorities and get plans for building a sanitary privy.

Sewage and garbage disposal

Swamped sanitary disposal installations imperil the health of man and animals in flooded areas. The domestic water supply is almost sure to become contaminated. It is necessary to get the septic tanks, cesspools, pits, and leaching systems back into service as soon as practicable. The local or State health departments or the United States Public Health Service give useful advice on cleaning and repair or relocation of installations.

Any problems relating to water supply, waste disposal, insect and rodent control should be referred to the local or State health departments, which have responsibility for enforcement of health measures and have people trained in these fields ready to help you.

Some garbage can be burned. What will not burn should be buried in a pit 4 or 5 feet deep, and covered with at least 18 inches of soil. Garbage fed to animals should be cooked to prevent spread of disease. Farmers' Bulletin 1950, Sewage and Garbage Disposal on the Farm, contains drawings of permanent and temporary installations. (For fly control, see p. 24.)

Combating odors

Odors in basements, although unpleasant, are not necessarily harmful to health. If ventilation does not remove them, sprinkle bleaching powder (chloride of lime) over the basement floor. Allow it to stay there until the floor dries, then sweep it up. This material is a good disinfectant.

Crop and 40 acres of ground gone with the flood.

A man who stayed with the flood. Milk cans on roof held supply of drinking water. Chickens were brought onto second floor. Water approached top of first-floor windows, shown by dark line at left.

Dry lump charcoal exposed in several open containers may adsorb the odorous substances from the air in enclosed spaces. If lime is used, it should be unslaked, and containers should be only half full to allow for expansion during air slaking. Further information may be found in Farmers' Bulletin 1991, The Use of Disinfectants on the Farm.

HOUSEHOLD MECHANICAL EQUIPMENT

Have motors for pumps, refrigerators, freezers, ranges, washing machines, vacuum cleaners, food mixers, and other household equipment examined by a competent person to see that they are clean, dry, and free-running before turning on the current, or they may be ruined.

Power washing machines should be thoroughly cleaned before being put into use. Gear housings should be opened and shafts and gears cleaned with kerosene. Wipe all parts with a clean cloth. Grit not readily seen by the eye may cause wear to moving parts when they are put into operation. (See also sections on "Cleaning Electric Generators and Motors," p. 19, "Electric Circuits", p. 2, and "Electric Wiring," p. 21.)

Clean all parts without forcing any dirt into the bearings. Wipe metal surfaces with rag wet with kerosene to remove rust and dirt stains, and coat thinly with petrolatum or machine oil to prevent further rusting. Before using, oil the bearings and wipe surfaces exposed to hands or clothing dry with soft cloth.

It is safest to let technicians inspect household machines and make repairs, especially of motors and power driven appliances. Co-

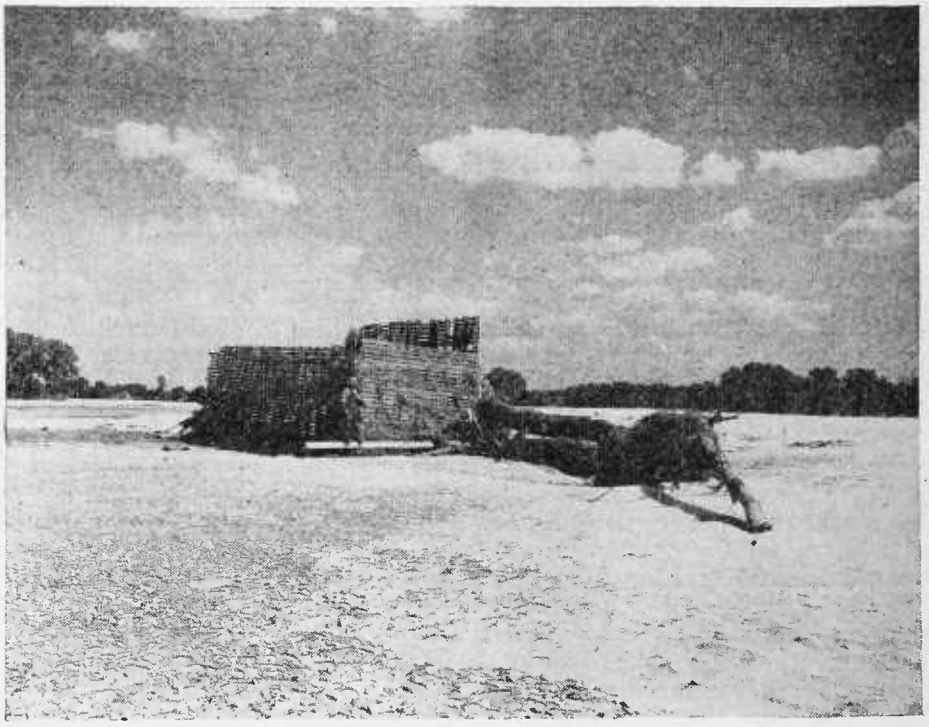
operation in the employment of electricians to collect and recondition the motors in a central shop may be practicable. (See also instructions under "Cleaning Farm Equipment," p. 18.)

FLOORS, WOODWORK AND DOORS

After the accumulation of wet mud and dirt has been shoveled from the floors they will in all probability be found badly buckled. Do not attempt to repair them until they have fully dried out. Start the heating plant as soon as it is in condition to operate, but don't use so much heat that the house becomes steamy. Dry wood as fast as you can without aggravating shrinkage or deformation. Open windows and doors enough to give good ventilation but maintain a temperature of 50° to 60° F. or higher in the house.

After the house has dried out it may be possible to draw some of the buckled flooring back into place with nails. Some humps may be removed by planing or sanding. The work can be lightened considerably if a planing or sanding machine can be rented. Such floors planed heavily may never look well enough to be used uncovered. But an old floor smoothed can serve as a base for new flooring. Or, when smoothed, the old floor may be covered with felt and one of the smooth floor coverings. These include linoleum and tiles of asphalt, rubber, or plastic materials. If badly buckled, the floor may have to be taken up and relaid. If only the surface finish is damaged, the floor may be refinished.

Scrub all woodwork with a stiff brush and plenty of water, to remove mud and silt from corners, cracks, and crevices before the house is dried out.



Kansas corn crib rode the flood into another county.

Taking care of locks and hinges

Locks, especially those of iron, should be taken apart, wiped with kerosene, and oiled. If it is not feasible to remove them, squirt in a little machine oil through the bolt opening or the keyhole, and work the knobs so as to distribute the oil. Otherwise the springs and metal casing will soon rust and need replacing. Do not use too much oil or it will drip onto the woodwork and make later painting difficult. Cleaning and oiling usually will put hinges in order.

For a final, thorough washing of floors, use whatever cleaning product you use for regular care—preferably a nonsudsing one. Cleaning instructions are given in Farmers' Bulletin 1834, House Cleaning Management and Methods. If refinishing is necessary, put off doing the work until the moisture has dried from the wood itself—from the framing, from between walls and floors, and from the back of the trim, even though this may take several months. Consult an experienced painter in regard to refinishing. Or if you can do the work yourself, be guided by instructions on cans of standard brands of paints and varnishes for household use. Directions for preparing surfaces and mixing paint are given in Farmers' Bulletin 1452, Painting on the Farm.

Surface mold of wood

Mold on the surface of wood can usually be removed with a cloth dipped in water to which a small amount of kerosene has been added, or with a solution of borax in water. (Use hot water so it will dissolve more of the borax.) Wood into which mildew has penetrated can be bleached with oxalic acid after the paint or varnish has been removed. **Since oxalic acid is poisonous it must be handled carefully, labeled "Poison," and kept out of the reach of children.** Use a solution made with 3 tablespoons of the acid to a pint of water or put the acid directly on the stain. Rinse the wood well and allow to dry thoroughly before refinishing.

Fixing roofs

Damaged roof coverings may be repaired temporarily with material immediately at hand and later repaired by one of the methods described in Farmers' Bulletin 1751, Roof Coverings for Farm Buildings and Their Repair.

PLASTERED WALLS AND WALLPAPER

Allow plaster to dry thoroughly before washing it. Brush off any loose surface dirt. To wash a painted wall use water with mild soap or any commercial cleaner that you have found satisfactory for the purpose. (Professional renovators prefer nonsudsing products.) Have one bucket for the cleaning solution, another for clean water for rinsing, and large sponges for both.

Always start washing a wall at the bottom and work up. Starting at the top is likely to result in water running down over the soiled area and streaking it. Water running down over a clean area can be wiped off without damage. Wash an area that you can reach easily without changing your position; rinse it immediately. Then wash the next area, overlapping the first one, and proceed until the wall is finished. Ceilings should be done last. Badly stained walls will need redecorating.

Wallpaper that has been wet usually is so discolored and brittle that it must be removed and the walls repapered. If paper has not been wet but some edges or sections have been loosened by dampness, it may be possible to repaste them. Use a

purchased wallpaper paste or make your own as follows:

Mix 2 pounds wheat flour and 1 quart cold water to a smooth paste; stir in 2 quarts of boiling water and continue boiling until paste is semitransparent; add 1 ounce of alum that has been dissolved in ½ cup of hot water.

To clean wallpaper, use a purchased puttylike cleaner. Chunks of bread may be used but are less effective. Some wallpapers are washable. Before attempting to wash paper try a small inconspicuous spot to see whether it can be done satisfactorily. Use only mild soap or synthetic detergent and proceed as for a painted wall. Squeeze as much water as possible out of the cleaning and rinsing sponges and work quickly so that paper does not become soaked.

To remove grease spots from wallpaper, cover with a paste made of cornstarch or talcum with carbon tetrachloride or other dry-cleaning fluid. Allow to dry and brush off.

CAUTION: Carbon tetrachloride is toxic when used in enclosed areas, and many of the other cleaning fluids are explosive.

SALVAGING FURNITURE

Take all wooden furniture outdoors and remove as many of the drawers, slides, or other working parts as possible. These will probably be stuck tight. Do not force the drawers with a screw driver or chisel from the front. Remove the back by cutting it out if necessary and push out the drawers. After the various moving parts of the furniture have been removed in this way, clean off all mud and dirt, using a hose stream if necessary, and then take them all indoors again and store them where they will dry out slowly. Do not leave them out in the sun as they will warp and twist out of shape.

Some furniture, especially that made of solid wood, may be salvaged by regluing. Gluing, however, is fairly difficult to do at home because on many pieces it is necessary to use clamps. Before starting this task, therefore, decide whether it is worth while investing in this equipment and whether you have the time and ability to do the work. If you find the work too difficult to attempt, consult a cabinetmaker.

Repairing veneered furniture is so difficult and requires so many different types of tools that it is not practical to try it at home. Get a cabinetmaker to do the job, or have the store from which you bought the furniture send it back to the factory to be repaired. If insurance allows part value on flood-damaged furniture, it may be worth while financially to apply the allowance on new articles rather than to pay for repairs on damaged items.

Removing white spots.—Furniture that has not been submerged may have developed white spots or a whitish film or cloudiness from dampness. If the whole surface is affected, try rubbing with a cloth wrung out of a mixture of ½ cup of household ammonia and ½ cup of water; wipe dry at once and polish with wax or furniture polish. For smaller areas or spots on varnished surfaces, rub with a cloth moistened with camphorated oil or oil of peppermint. A drop or two of ammonia on a damp cloth may do the work. Rub dry with a soft cloth and then polish. Cigarette ashes rubbed in with the finger tips are often effective in removing white spots. If all efforts to remove white blemishes are ineffective, it may be necessary to refinish the furniture.

Mildew.—Brush any loose dirt from upholstered furniture and shampoo the fabric. Follow directions given for carpets and rugs on page 15. Work quickly. If there is mildew on the fabric, wipe it with a cloth wrung out of dilute alcohol

(1 cup denatured alcohol to 1 cup of water). Dry the furniture thoroughly.

If furniture has been wet for a long time, the stuffing may have become mildewed or may even have started to decay. Place furniture in a room that can be tightly closed and fumigate it by burning formaldehyde candles in the room. Or you may prefer to send the furniture to a reliable dry-cleaning or storage company for fumigating.

Be careful to follow directions given with the candles, for formaldehyde is very irritating.

In cases of badly damaged upholstered furniture, especially any that has been submerged, stuffing may be so deteriorated that it needs to be replaced. Springs may need to be cleaned and oiled, frame cleaned. If much work is needed, the furniture should be sent to an experienced cabinetmaker or upholsterer unless you are confident of your own ability to do such work.

Metals.—Clean metal as soon as possible, especially iron. Wipe rust from iron with a cloth saturated with kerosene. Iron hardware can then be coated lightly with petrolatum or machine oil to prevent further rusting. Use stove polish on stoves or similar ironwork. Wash cooking utensils thoroughly with soapy water to remove the kerosene; to prevent further rusting, rub with unsalted cooking fat and heat slowly to permit the fat to soak into the pores of the metal.

Stainless steel, nickel-copper alloy, or metals plated with nickel or chromium need only thorough washing and perhaps polishing with a very fine-powdered cleaner. If the plating of furniture or hardware is broken so that the base metal is exposed and rusted, wipe with kerosene, wash and dry the surface, and then wax to prevent further rusting.

Wash aluminum thoroughly and scour any unpolished surfaces, such as the insides of utensils, with metal wool. Polished or plated surfaces of aluminum should not be scoured but should be polished with metal polish on fine cleaning powder. To brighten the darkened insides of an aluminum pan fill it with water, add ¼ cup vinegar or 1 tablespoon of cream of tartar for each quart of water and boil. If the utensils have been submerged and are darkened both inside and out, prepare one of these acid solutions in a tub or wash boiler and immerse the utensils in it.

Copper and brass can be polished with a special polish or with salt sprinkled on a piece of lemon or on a cloth saturated with vinegar.

CARE OF BOOKS

Books and papers should be dried carefully and slowly. Books should be placed on end to dry and the leaves kept apart. After exposure to the air for a time they should be piled and pressed to keep the leaves from crumpling. This alternate drying and pressing should be continued until the materials are thoroughly dry, so as to prevent mildew. If books are very damp, sprinkle cornstarch or talcum between the leaves to take up the moisture; leave for several

School closed.

hours and then brush off. A little heat and separating of the pages are desirable toward the end of the process, to prevent musty odors.

FOODS AND CLOTHING

SAVING DAMAGED FOODS

Floodwaters carry filth and disease bacteria from sewage systems, backed-up sewage, and barnyard. Foods, drugs, or cosmetics which have been covered by floodwaters are potentially dangerous.

Precaution against disease.—You can help to prevent typhoid and other dangerous diseases in the following ways:

Destroy fresh fruits and vegetables, foods, medicines, and cosmetics in cardboard containers and other packages that are not hermetically sealed which have been in contact with floodwaters. This includes flour and other commodities in bags.

Destroy the contents of crown-capped bottles and screw-top glass containers, including canned food in glass jars, if the containers have been covered by floodwaters. Seepage can carry harmful bacteria into the contents of all but the most tightly sealed containers.

Experience has shown that the only flood-damaged foods that are entirely safe for salvage are those in sealed metal cans, but such containers should be carefully cleaned and *disinfected before opening.* Here is how to do it:

(1) Inspect cans and destroy any which bulge or leak (indications of spoilage).

(2) Remove labels and wash containers in warm water containing soap or detergent.

(3) Immerse containers in chlorine solution containing 200 parts per million of chlorine for at least 2 minutes. The proper strength solution can be made by adding 1 tablespoon of 5-percent household laundry bleach to each gallon of water. Use more of the bleach if it is weaker than 5 percent. Rinse the cans in clean water.

OR—Immerse in some other sterilizing solution if recommended by local authorities. Rinse in clean water.

OR—Place containers in boiling water and boil vigorously for at least 2 minutes. Dry cans to prevent rusting.

Chlorine and most other sterilizing solutions are poisonous. Take precautions that the chemicals will not be swallowed by members of the family, pets, or livestock.

Inspectors of the Food and Drug Administration cooperate with local and State health officials to check commercial supplies of foods, animal feeds, drugs, and cosmetics that have been exposed to floodwaters. They supervise the proper cleansing and disinfecting of sealed containers, and the destruction of goods that are unfit for use. Most retailers and distributors cooperate fully. You can help them to guard against distribution of contaminated goods. Avoid strangers selling food at suspiciously low prices. Report them and the license numbers of their cars or trucks to health officials. Report also to health officials the movement or sale of foods that you suspect to be flood-damaged.

CLEANING CLOTHING AND BEDDING

Mud-stained white cottons and linens (clothing, sheets, towels, table linens, etc.) can be cleaned, but it takes some effort.

Do not plunge white cotton and linen fabrics stained with floodwater carrying red or yellow clay into hot soapsuds. Clay makes a stain like iron rust, and hot soapsuds will set such stains. Also be careful not to overbleach flood-stained fabrics.

First brush off all loose dirt possible. Then rinse mud-stained fab-

rics several times in cold water to take out particles of soil lodged in the yarns. When no more dirt can be rinsed out, wash the articles in warm soapsuds, through several waters if necessary.

In extreme cases, try bleaching white cottons, linens, and rayons in Javelle water, in sodium perborate, or in a mixture of sodium perborate with hydrogen peroxide. Do not use these chemicals on colored fabrics. Dry white fabrics in the sun to aid bleaching.

Javelle water and other chlorine bleaches (sodium hypochlorite solutions) remove mud stains from uncolored cotton, linen, or rayon cloth. Do not use them on silk or wool. To prepare Javelle water: Mix ½ pound of washing soda in 1 quart of cold water. Add ¼ pound of bleaching powder (commonly called chloride of lime). Strain this liquid through a piece of muslin and store ready for use in a bottle with a tight cork or stopper.

When necessary, place ½ pint of this mixture in 1 gallon or more of cold or lukewarm water, and immerse the clothes. Allow them to remain until bleached enough, although longer than 10 minutes is likely to be harmful to the fabric. Next dip the clothes in a solution made up of 1 tablespoon of sodium thiosulfate (sold by photographic-supply stores as "hypo") and 1 to 2 tablespoons of vinegar in 1 gallon of water. This stops the action of the chlorine remaining in the cloth after the treatment with Javelle water. Then rinse the cloth well in clean water. To remove the stain completely you may have to repeat the Javelle water-thiosulfate treatment several times.

Flood-damaged bedding requires special care and precaution in drying.

Sodium perborate is one of the safest bleaches for all types of materials. For a large stain, soak the entire garment for a half hour or longer in sodium perborate and soapsuds (4 tablespoons perborate to a pint of soapy water), or dip quickly in a mixture of 1 level teaspoon sodium perborate with 1 pint hydrogen peroxide. Rinse in water. Be sure to use the mixture immediately because it soon loses its strength.

Cleaning woolens

To clean woolen clothes and blankets, first shake and brush well to remove as much dirt as possible. Next rinse several times in lukewarm water to remove particles of soil lodged in fibers. Then prepare an abundance of lukewarm suds from neutral soap; or use one of the newer synthetic detergents recommended for laundering fine fabrics. Immerse the wool material and work it gently in the suds or detergent solution with as little agitation as possible. If necessary, wash in a second lukewarm suds. Never rub or boil wool. Rinse carefully in several changes of lukewarm water.

Woolens should be dried in a warm place but not near a fire or in direct sunlight. Never allow them to freeze. Hang knitted underwear from the shoulders. Spread sweaters and other knitted garments on a

table and shape according to desired dimensions.

Hang blankets over a line or on two lines close together to distribute the weight. When blankets are dry, brush on both sides to lift nap to its original softness. Press wool garments while they are still damp with a medium-hot iron, and protect with a pressing cloth if they are to be ironed on the right side. Be sure to leave a little moisture in the wool or it will look hard and lifeless.

Silks and rayons

To clean silk and rayon articles, remove mud and other loose dirt in the way recommended for cotton and linen articles. Wash in an abundance of lukewarm suds, according to the directions given for woolens. Dry in the shade and, while still damp, press on the wrong side with a warm iron.

Removing other stains and rust

Mildew stains are caused by a fungus growth. If mildew has penetrated the fibers and been there for some time, the stain cannot be removed without damaging the cloth. Lemon juice, sodium perborate, and Javelle water will bleach out mildew stains on white cotton, linen, and rayon.

Remove iron rust and some dye stains with sodium hydrosulfite. It can be bought at drug stores under various trade names as a dye or color remover for preparing cloth for redyeing. Follow the directions given on the package and rinse well in water.

Many faded and stained garments and household articles, the fabrics of which are still good, can be made usable by redyeing. Usually it is easier to dye a fabric a deeper shade of the same color than to change to a new color.

Care of bedding

Mattresses soaked with floodwater are generally damaged beyond use and should be discarded, as reconditioning is too difficult to be done at home. A sufficiently valuable mattress or one of the innerspring type may be sent to a commercial renovating company, where the stuffing will be taken out and thoroughly cleaned, the ticking cleaned and resized, and the whole put together again in a mattress frame.

Transfer the feathers from the pillow to a muslin bag two or three times the size of the ticking. First sew the edges of the openings of the ticking and the bag together, then shake the feathers from one into the other. Wash the bag of feathers in lukewarm soapsuds, repeat, and rinse in lukewarm water, changing the water several times. Squeeze out all of the water possible, and lay the bag flat on a sheet to dry in the sun or in a warm place, or pin it to the clothesline to dry in the open air. Another good way is to lay it flat on a window screen which has been propped up off the ground. Shake up the feathers occasionally to hasten the drying.

If a pillow has stood for a long time in floodwater, it may be impossible to remove all traces of offensive odor. While the feathers are drying wash the ticking. When it is dry, apply a very stiff starch mixture to the inside with a sponge to keep the feathers from working through. When both feathers and ticking are thoroughly dry, refill the ticking in the same way that it was emptied.

Flood-soaked thick comforters of cotton or wool, like mattresses, are very difficult to recondition. The only way is to take them apart and wash the cover and filling separately and then refill and tuft them together. Lightweight quilts may be washed like cotton or wool blankets and, if possible, should be dried quickly out of doors in the sun to remove the unpleasant odor.

CLEANING RUGS AND CARPETS

Let rugs and carpets dry out thoroughly. Then clean by beating or sweeping or by using a vacuum cleaner. If necessary, shampoo them with soap jelly or a commercial rug shampoo available at many drug and department stores. Leave large rugs on the floor or spread them out on a porch. For convenience work with small rugs on a table near the sink or laundry tubs.

Make the soap jelly with 1 quart of mild soap flakes dissolved in 5 quarts of hot water. Beat with an egg beater to form a stiff lather and apply with a brush or sponge to a small part of the rug at a time. Scrub gently. Then wipe off the dirty lather and rinse this section immediately with clean water. Work over the surface of the rug in this way in overlapping sections so as not to leave streaks, and when rinsing for the last time brush the nap in one direction.

After shampooing them, dry the rugs or carpets as quickly as possible by hanging them up and exposing them to a circulation of warm, dry air. Make sure they are thoroughly dry, for even though the surface seems dry, any moisture remaining at the base of the tufts will quickly rot the rug, causing it to fall apart.

Under ordinary circumstances there is danger of colors running and rugs shrinking when shampooed by home methods, but with articles badly damaged by floods, it is usually a case of reconditioning them for any possible use.

After such treatment some types of machine-made pile rugs may need resizing to make them lie flat on the floor. Dissolve one-half pound of granulated glue in 1 gallon of boiling water. Lay the clean rug face down on papers in some part of the house where it can remain undisturbed, and tack it down at intervals, being careful to have it straight and true. Then with a whitewash brush or a whisk broom, brush the hot glue over the back of the rug, and let it dry thoroughly.

CAUTION: Do not use so much glue that it will soak through to the right side of the rug.

Rugs and carpets that are torn or worn can be repaired by following directions given in Farmers' Bulletins 1925, ABC's of Mending; 1960, Carpet and Rug Repair.

More detailed information than given above can be obtained from the following publications issued by the United States Department of Agriculture: Leaflet 322, Preventing and Removing Mildew, Home Methods; Farmers' Bulletin 1474, Stain Removal from Fabrics; Farmers' Bulletin 1873, Slip Covers for Furniture; and Farmers' Bulletin 1960, Carpet and Rug Repair.

THE FARM

LIVESTOCK AND FEEDS

Water alone does not necessarily injure feed. The principal danger in feeding hay, grain, or forage that has been wet is caused by changes in the feed resulting from mold, putrefaction, and fermentation. If feed has only recently been wet and if it can be dried quickly, there is much less danger than when the dampness is of several days' or weeks' duration.

Wet hay should be promptly spread out to dry and should be turned and shaken frequently. It may be handled in much the same way as hay that is being made from freshly cut grass. Bales of hay, of course, should be opened and well spread out. Wet grain, likewise, should be spread and dried as quickly as possible. Small quantities for immediate use may be dried fairly quickly in artificially heated, well-ventilated buildings. Farmers' Bulletin 2009, Storage of Small Grains and Shelled Corn on the Farm, and Circular 839, Mechanical

Portable driers arrive to begin salvage operations on stored grain damaged by flood.

Drying of Corn on the Farm, and F. B. 2028, Drying Forage by Forced Ventilation, give methods for drying grain.

Feeds that are slightly musty or partly spoiled are more likely to injure horses than cattle. Hogs will tolerate still poorer feeds. But there is a distinct risk in using feed that is spoiled in any degree. Under no circumstances should spoiled material be fed if sound feed is available. Livestock may, however, tolerate small quantities of inferior feed, and such feed may be given to sustain life until supplies of safe feeds can be obtained. The principal danger is from digestive disturbances and so-called forage poisoning.

The presence of sand or dirt in feed is not, in itself, a noteworthy danger since animals normally consume small quantities of dirt. However, the presence of considerable quantities of such matter tends to make feed unpalatable. You can remove the dirt by sifting, shaking, or other means.

Handling mows of heating hay

Heating haymows may set fire to farm buildings. On the first indication that hay in barns is heating, maintain a close watch. The emission of water vapor, pungent and irritating odors, or the presence of hot, wet areas, or "flues," on the surface of the mow are warnings. Common salt may retard fermentation, but it cannot be relied on to prevent spontaneous ignition of hay.

The first thing to do is to make a check on the temperatures down in the mow before deciding upon what action to take. Drive a sharp-pointed pipe down into the hay, lower a thermometer inside the pipe, and leave it there for about 20 minutes. Make the reading quickly when the thermometer is removed.

If the temperature climbs to 185° F., it is definitely reaching a point of danger which warrants stopping all ventilation and removing the hay from the barn, even though, if left undisturbed, the hay might cool eventually. If the temperature reaches 200° there should be no question about the advisability of removing the hay. But before this is done, take all possible precautions against fire. If there is a volunteer fire department near, ask it to bring out full equipment. If there is no such service, have an adequate supply of water at hand to quench a possible blaze when a "hot pocket" is exposed to the air. The fire department may be able to cool the hay with carbon dioxide gas. This has been done successfully in some barns. Do not uncover or remove such hot hay without first wetting it thoroughly or cooling it with carbon dioxide; otherwise when it is exposed it is likely to burst into flames.

Guard livestock health

In the wake of floodwaters there is some danger of infectious diseases, but unless serious outbreaks of infection have occurred recently, the danger is not sufficiently great to be alarming. However, wher-

ever animals are assembled in concentration pastures for care during the emergency, it is advisable to be on the watch for any indication of infectious diseases and arrange for the handling and feeding of the animals by an experienced stockman, under the supervision of a veterinarian.

As a precaution clean out all hog houses, barns, and chicken houses and spray with a good disinfectant before they are used again by livestock. It is also advisable to spray animals with a good insect repellent. Consult your veterinarian about vaccinating livestock to prevent anthrax. Hogs should be vaccinated against hog cholera and swine erysipelas. It may be advisable, also, to vaccinate chickens and turkeys against Newcastle disease.

All contagious and infectious diseases should be reported promptly to the nearest veterinarian, the State veterinarian, or any livestock sanitary official.

Trash in pastures.—Before restocking pastures that have been flooded, inspect them, especially along fence lines and corners. The

Disease may attack livestock turned back to pasture too soon after floodwater has receded.

This pig will live to go to market.

short time taken will be well repaid through the prevention of cuts and other injuries to livestock from pieces of barbed wire, sharp metal, and trash.

Dispose of animal carcasses

As soon as floodwaters have subsided search all pastures for dead animals. When dead animals are found, prompt and sanitary disposal is of great importance to the living animals in the neighborhood. It is good practice to dispose of all animal carcasses in a sanitary manner, even though the danger of disease may at the time seem remote. Wherever it is convenient, send carcasses of drowned animals to a rendering plant. And such carcasses usually have some commercial value.

If rendering is not practicable, the dead animals should be disposed of on the premises. Immediately after finding a carcass, cover it with crude oil or kerosene to keep away dogs, buzzards, and vermin. Satisfactory burning of animal carcasses has been found extremely difficult, and burial is preferable to burning, especially where a sufficient number of carcasses are pres-

ent to justify importing power equipment. Choose a site where subsurface drainage will not reach the water supply of persons or livestock. Burial should be deep, so that predatory animals cannot reach the carcasses.

CLEANING FARM EQUIPMENT

Tractors and internal-combustion engines

Care and skill are needed in reconditioning flood-damaged machinery. Before attempting to start any engine, make a thorough inspection to determine whether everything is in order. If the tractor or engine has been completely submerged, do not even attempt to turn over the motor or start it. The equipment should not be allowed to stand any longer than necessary. Delay may allow rusting and corrosion and the sticking of cylinders or other motor parts that might not occur if the machine were cleaned promptly.

The steam-cleaning equipment used by implement dealers cleans tractor motors and transmissions without the necessity of taking the machine completely apart and in one-third the time required for cleaning by hand. Air or steam pressures should be applied to the oil line to make sure that all silt and grit are completely removed, especially in motors having a full-pressure lubricating system.

Where the work is to be undertaken at home, carefully clean exposed gears, sprockets, and chains with kerosene or solvent, then with soap and hot water in order to remove all the mud and silt. Then coat with light oil. Valuable engines should be cleaned and reconditioned by or under the supervision of skilled mechanics.

A few of thousands of trucks, tractors, and farm machines covered by sand in floods of 1951.

Magnetos, generators, and starters should receive the treatment described on page 19.

Remove and clean carburetors, intake and exhaust manifold, magnetos, and spark plugs, and all parts of the engine that might entrap dirt, including air filters. Note how and where the parts came off, so they can be replaced exactly as they were.

Take apart as necessary and thoroughly clean all bearings, gears, and pistons in an engine with open crankcase.

Inspect the interior of enclosed crankcases or gear cases by removing plates or handhold covers. If there is water or grit in the case, which might have been admitted by leaking gaskets or packing glands, remove the oil, wash out the case with kerosene, and put in clean oil.

Wash the external or fin portion of the radiator carefully with a hose. Sediment or dirt caked in the cells will cause overheating of the engine.

Inspect the fan belt and the fan. Replace and repair them as necessary and see that the fan turns freely.

Remove, empty, and clean out the gasoline tank, as it is likely to contain water and grit after being immersed.

Take every precaution against explosion in handling gasoline tanks.

After all parts have been replaced examine the machine to see that everything appears in order, then turn over the engine by hand. If it turns freely, it probably is ready for starting. Be sure to have all parts clean and properly lubricated before starting the engine or machine.

Farming implements

Before trying to operate any machine inspect it carefully and remove all dirt and debris.

Clean and oil all bearings, sprockets, chains, and gears not protected against the entrance of water and grit. Sometimes bearings equipped with grease cups or Alemite or Zerk fittings can be sufficiently cleaned by forcing grease or oil through them until a considerable amount has oozed out from the sides of the bearings.

After cleaning the bearings and replacing the parts removed, carefully turn over the moving parts of the machine by hand to make sure that they work freely and that no dirt or debris remains to interfere with operation of the machine.

Examine all belts and repair or replace them as needed.

Unroll, clean, and thoroughly dry all canvas conveyors or covers on the machine or in storage to prevent mildewing.

Examine the knife bars of binders and mowers and free them of dirt.

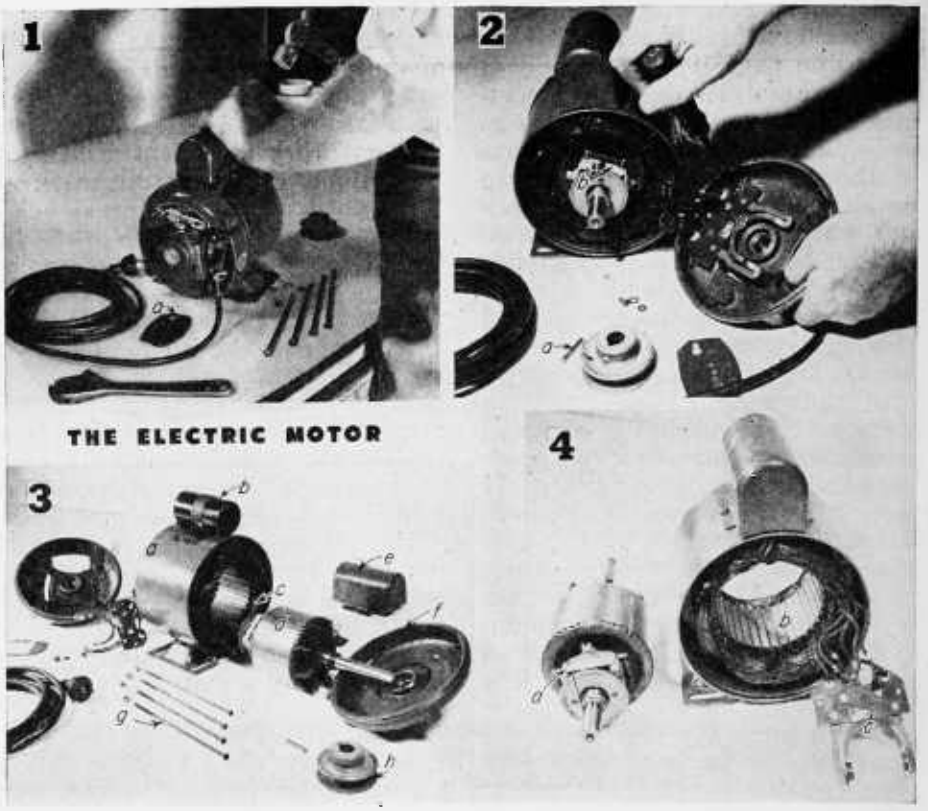
Clean all of the dirt and rust from smooth parts such as moldboards of plows, disks of harrows, and shovels of cultivators, and coat them with rust-preventive compound, grease, or used crankcase oil. Consult Farmers' Bulletin 1754, Care and Repair of Mowers and Binders.

CLEANING ELECTRIC GENERATORS AND MOTORS

When generators and motors have gone through a flood it is usually advisable to have them inspected and reconditioned by an experienced electrician. If such service is not available, a careful owner perhaps may obtain satisfactory results by proceeding as follows:

Remove and thoroughly wash all bearings that are not sealed: then replace them after oiling or greasing. Clean the oil wells supplying the bearings and fill them with fresh motor oil.

Clean centrifugal switches, slip rings, and commutators of grit and



Taking motor apart for cleaning. (*1*) Removing bolts and capacitor cover. (*a*) Cover plate. (*2*) Removing shaft, disconnecting wires. (*a*) Shaft key, (*b*) centrifugal device, (*c*) snap switch. (*3*) Motor disassembled. (*a*) Stator, (*b*) capacitor, (*c*) running winding, (*d*) squirrel-cage rotor type of armature, (*e*) capacitor cover, (*f*) end bracket, (*g*) through bolts, (*h*) V-pulley. (*4*) Rotor and armature. (*a*) Centrifugal device, (*b*) laminated core, (*c*) snap switch.

dirt particles and examine brushes to see whether they move freely in their holders.

Take out the armature, or rotating member, and clean it well with water from a hose under low pressure or with pails of water. High-pressure water or air may cause even fine grit to damage surfaces or insulation. Treat the stationary coils similarly. After washing with water, wash with carbon tetrachloride. Do this in open air, as the fumes are poisonous. Or wash with kerosene, not gasoline. (Remember there should be no smoking and no exposed flame near the place where these liquids are being handled.)

The motor coils, either rotor or stator, should be dried by heating to a temperature of about 150° F. for 10 to 15 hours. The windings should then be painted with a light insulating varnish. If varnish is not available, an asphaltum paint may be substituted. One coat should be applied and then baked for a period of 4 or 5 hours at a temperature of 200° to 250°. A second coating of the same material should then be applied and baked for 3 or 4 hours at the same temperature as the first coat to insure a good job.

Before assembling the motor or generator, check starting contacts for corrosion and lubricate lightly

all moving parts. Replace oil wicks and renew oil in reservoirs. The bearings should be thoroughly reconditioned. If sealed-type ball bearing has leaked, allowing grit to enter, the bearings should be soaked in gasoline or oil and any loose grit blown out by compressed air. With the sleeve-type bearing the dirt should be removed with kerosene and old wicks replaced with new material. If the capacitor overheats, remove it and bake it in mild heat for several hours. If it continues to overheat, get a new one.

Barn and milkhouse machines.—Electrically driven machinery such as milking machines, milk coolers, brooders, water pumps, cream separators, feed grinders, hay choppers, and farm shop equipment call for a combination of this type of reconditioning plus the special attention needed for their motors.

HOW TO CHECK YOUR ELECTRIC WIRING

(Wear rubber-soled shoes or boots and rubber gloves in checking electric circuits)

1. Open the main switch in each building or at the yard pole if there is a yard-pole switch.
2. Remove all branch circuit fuses.
3. Disconnect all plug-in equipment and open the switches at each piece of permanently connected equipment.
4. Clean dirt and debris from the load-center panels and the switch, outlet, and junction boxes.
5. Allow the entire wiring system to dry out.
6. Have the whole system checked by a skilled electrician, preferably an electrical inspector with equipment for testing insulation resistance.
7. Make all changes recommended by the inspector.
8. Insert the fuse in a single branch circuit and close the main switch. If the fuse blows, there is still a fault in that circuit. If the fuse does not blow, look over the visible wires and each outlet in that circuit to see if there is any smoke or other sign of faults. If everything seems to be normal, remove the fuse.
9. Repeat this step with each of the other circuits.
10. After all circuits have been checked individually, insert all fuses in their proper places and plug in and operate an appliance *known to be in good condition* at each outlet.
11. Do not connect appliances and equipment that have been submerged, until after each one has been properly cleaned and checked. After proper cleaning and checking, each one should be cautiously operated individually to be sure that it is in good operating condition.

Lighting in the home is discussed in Farmers' Bulletin 1838, Electric Light for the Farmstead. Other useful information is contained in Miscellaneous Publication 597, Planning Your Farmstead for Wiring and Lighting, also Program Aid 171, Keep Your Electric Water System in Service (both distributed by the Rural Electrification Administration).

FIRST AID TO FLOODED LAND

Getting flooded land back to work may take considerable time and much labor. A farmer may be able to do it himself, but many renovation jobs call for community cooperation, technical help, and use of heavy equipment, either by farmers or by experienced contractors.

Clear ditches and drains.—This is work a farmer can usually do for himself. The aim is to restore promptly the carrying capacity of the drains and get rid of excess moisture in the soil and fit fields for cultivation. Stagnant water is a health danger to the farm family and the neighborhood.

Clear outlet ditches and culverts of debris, drift, silt bars, and shoals to provide good outflow for field ditches and drains. Shovels or team and scrapers will do most of the work in the smaller ditches. In larger ditches dynamiting may help.

Inspect head walls and outlets of tile drains and make sure that drainage channels are clear. Standing water over a tile line indicates location of obstructions. In reconditioning ditches and tile drains, start at the lower end of the system and work backward. If there is water standing, it may be necessary to dig or blast an emergency channel through the obstructing material. Breaks through streambanks or dikes must be plugged to prevent normal high water from reflooding bottom lands. Gullies started by intense rains or flood waters may be checked by temporary structures or by diversion ditches around the heads of the gullies. These check further cutting until soil-conservation measures for permanent control can be worked out.

Neighbors plan together.—Communities find it necessary to cooperate when flood damage has been so severe that large scale replanning of water-management is required. Such situations may call for realinement of streams or restoring them to their regular channels, streambank stabilization, diking, filling scour holes, dealing with heavy overlays of silt or sand, gully control, and similar undertakings. These big jobs are likely to affect the whole cropping system and layout of the farm and of neighboring farms. For such problems farmers are likely to want the technical assistance of the Soil Conservation Service, which is available through local soil conservation districts; also help from county

Half an acre of grassland on hillside proves refuge for herd on flooded farm.

County agent and farmer discuss recovery plans in field of tomatoes swept by flood.

agents, experienced contractors, and other qualified advisers.

Land with relatively light coverings of sand or silt can be brought back to production by normal tillage methods, though they may call for more than the usual supplies of manure and fertilizer. It may be necessary to grow grasses or forage crops for 1 year or longer before the usual tilled crops are planted again. Heavier overlays of silt or sand will call for more drastic changes in production, as recommended by technical specialists. Reseeding of meadows will provide an opportunity to replace old permanent pastures with more valuable mixtures of grasses and legumes that can be expected to produce more feed.

INSECT AND RODENT CONTROL

Control of insects in flooded zones is vital. Emphasis should be placed on prevention of insect breeding by restoring drainage and repeating treatment with larvicides as needed. (See p. 2, on drainage.) Clean up decaying animal and vegetable matter in which certain insects breed and destroy it as soon as possible. Removal of spoiled food, grain, and carcasses was one of the big problems after the disastrous floods of 1951. If the cleanup is delayed, it is all the more important to take quick concerted action in killing the larvae to prevent mosquito and fly breeding.

House screens should be repaired to keep out flying insects. An oil solution of DDT or methoxychlor applied to screens will kill the insects alighting there, and will keep out gnats, midges, and other small flies that can enter between the meshes. These treatments will also give protection against flies, mosquitoes, and many other insects that breed abundantly in standing

water, stagnant pools and wet debris, and animal matter. Apply sprays or aerosols containing pyrethrum inside of houses, if necessary to supplement other insect-control measures.

Take care not to breathe the dust or mist of insecticides. Do not use oil sprays around open lights or fires. Avoid contaminating foods with insecticides. Do not use DDT oil solution on vegetation.

INSECTS AFFECTING MAN

Concentration of people in camps may cause trouble from annoying and disease-carrying insects such as **lice, bed bugs, mosquitoes, and houseflies.**

The best and simplest control for bed bugs is to spray mattresses and bedsteads with a 5-percent DDT solution. This spray will kill all insects present and will protect the beds from reinfestation for at least 6 months. About half a cup is enough to treat a double bed and mattress. You may have to treat walls and furniture such as bureaus, chests, and easy chairs.

To control **body lice** apply about 2 ounces of a 10-percent DDT powder inside the clothing. Use this powder also to control **head lice.** Apply it thoroughly to the hair and rub it into the scalp. Leave the powder in the hair for about 10 days. If it is washed out after 1 or 2 days, make a second application in about 8 or 10 days.

Stop the flies.—Control **house flies** by the following methods:

1. Apply a 5-percent oil solution of DDT or methoxychlor to screens, porches, doorways, and the interiors of houses. Pay special attention to the flies' favorite resting places. Treat breeding places and garbage cans and surfaces surrounding them with an oil solution or a spray prepared from a DDT or methoxychlor wettable powder or emulsifiable concentrate. The wettable powder spray should contain 2.5 percent, and the emulsion 5 percent of the toxicant. If the flies have developed resistance to DDT or methoxychlor, use a spray containing 0.3 to 0.5 percent of lindane or 2 percent of chlordane. Use one of the same sprays on barns, outbuildings, or vegetation where flies rest. The outdoor toilet should be made fly-tight.

In dairy barns and milk rooms use methoxychlor or lindane but not DDT or chlordane.

Wettable powders and emulsifiable concentrates containing various percentages of these toxicants are on the markets, ready for dilution with water to obtain a spray of the desired strength. Follow the directions on the container for mixing insecticides.

2. Keep outdoor toilets free from flies by spraying both inside and outside with one of the sprays described above. Put a handful of borax into the pit every 4 or 5 days.

3. Protect food from flies and other insects.

4. Clean up breeding places of flies.

Painting screen to keep out flies, mosquitoes, and punkies.

5. Keep garbage containers covered tight. Remove garbage and manure frequently. Burn or bury garbage that cannot be used for feed or fertilizer. Manure and garbage to be used for fertilizer should be spread thin on fields so that it will dry out rapidly and not support fly development.

Mosquitoes, chiggers, gnats, and ticks.—After a flood **mosquitoes** may be more abundant in usual mosquito territory and may also appear in areas not usually troubled by them. In some sections malaria may be a menace if mosquitoes are not controlled. Take the following steps:

1. Repair screens and spray them with a 5-percent DDT oil solution or emulsion. Use the spray also inside the house, especially in bedrooms. Spray under and behind furniture, in dark places, and other spots where mosquitoes may hide.

2. Use a household spray or an aerosol bomb containing DDT and pyrethrum for a quick kill of mosquitoes, as well as flies and other insects that may get into houses.

3. Keep small children indoors, especially early in the morning and in the evening. Persons who must go outside should cover all exposed parts of the body with a thin film of repellent, and also put repellent on the clothing. This treatment will protect against mosquitoes and chiggers and give at least partial protection from ticks. Treat bed nets with a repellent. A good repellent is the 6–2–2 mixture used by the Armed Forces. If this mixture is not available, use one of the components—dimethyl phthalate, Indalone, or repellent 6–12.

4. Empty the water from barrels, cans, and other vessels, not only to prevent mosquitoes from breeding, but also because it may be polluted by floodwaters.

5. Wherever possible, drain all ponds, pools, or standing water in which mosquitoes may develop. If drainage is impossible, treat the water with 5-percent DDT oil solution, fuel oil, or other mosquito larvicide. Drain or treat flooded cellars and vaults.

Adult mosquitoes, flies, and gnats may be controlled on a community-wide basis with a fog or mist applied with special equipment or aircraft. Treatments may have to be repeated two or three times a week for several weeks, the number of treatments depending on the severity of the insect-control problem and how soon insects from surrounding territory enter the treated area. Some pest-control operators contract their services for fogging infested premises.

Space spraying alone may not suffice and it is expensive as well as limited in scope. Control of breeding spots should be given high priority.

INSECT PESTS OF LIVESTOCK

Black flies or buffalo gnats, when numerous, may cause serious losses in livestock, especially along tributaries of the Mississippi River in Arkansas, Louisiana, Mississippi, and Tennessee. **Horn flies, stable flies,** and **mosquitoes** are also injurious to livestock. For controlling these pests use a spray containing 0.5 percent of DDT, methoxychlor, TDE, or Toxaphene prepared by adding a wettable powder or emulsifiable concentrate to water. Sprays containing pyrethrum are also useful for controlling all the bloodsucking flies affecting livestock.

Do not apply DDT, TDE, or toxaphene to dairy cows, for some of the insecticide may appear in the milk.

Methoxychlor or pyrethrum sprays may be used on dairy cows.

Remove livestock from low-lying pastures along rivers and put them on higher, open pastures.

Further information on the control of these insects may be obtained

from the following publications of the Department of Agriculture: Leaflet 182, House Fly Control; Leaflet 283, Fly Control on Dairy Cattle and in Dairy Barns. Publications issued by the Bureau of Entomology and Plant Quarantine include: E–401, The Southern Buffalo Gnat; E–681, The Use of DDT for Bedbug Control; E–685, Control of Human Lice; E–698, Use of Insect Repellants and Miticides; and E–762, The New Insecticides for Controlling External Parasites of Livestock.

RODENT CONTROL

Rats cause destruction in flooded areas and are carriers for at least six diseases. A control program for flooded and flood-fringe areas includes killing rats, removing rat harborages, eliminating their food supplies, and ratproofing buildings. Poisons for rats and other rodents include such chemicals as red squill, ANTU, and zinc phosphide. They are used in baits.

Care must be exercised and directions followed closely to avoid killing livestock, pets, and even people.

Government technicians have even more deadly rodenticides, some of which are made into drinking baits. These poisons are restricted to use by qualified operators. United States Public Health Service and State and county health services also make war on rodents.

RELIEF AND REHABILITATION SERVICES

Representatives of county, State, and Federal agencies are on hand to extend aid in flood disasters, both in emergency relief and rehabilitation. American Red Cross maintains a national and four area offices and is represented by a chapter in every county. It gives emergency assistance to meet the immediate needs of flood victims for food, clothing, shelter, and medical and nursing care. It also assists in rehabilitation on an individual family need basis. Red Cross services are given outright; no loans are made.

Health measures are described on pages 4–7, 12. Public Health agencies give assistance in clean up operations and sanitation. Rehabilitation services of the United States Department of Agriculture can be discussed with local representatives of the bureaus operating within the flood area. Departmental aid includes several types of loans to help in rehabilitation.

Services of the Department's disaster loan programs are of great assistance to farmers who have suffered property or production losses in flood areas. Ordinarily, under the regular authorizations, departmental expenditures for relief or rehabilitation are made only for the regular programs and practices, such as soil conservation. After the Kansas-Missouri flood in 1951, under special authorization from Congress, the Department bought feed to tide over livestock, assisted farmers in seeding and rehabilitating their land, gave some financial aid in carrying out the soil conservation program, and lent facilities, engineering services, and machinery to help the farmer clear drains and repair terraces and outlets. Production and rehabilitation loans at a low rate of interest were made in sufficient amount to keep farmers in business.

PRECAUTIONS AGAINST FLOOD

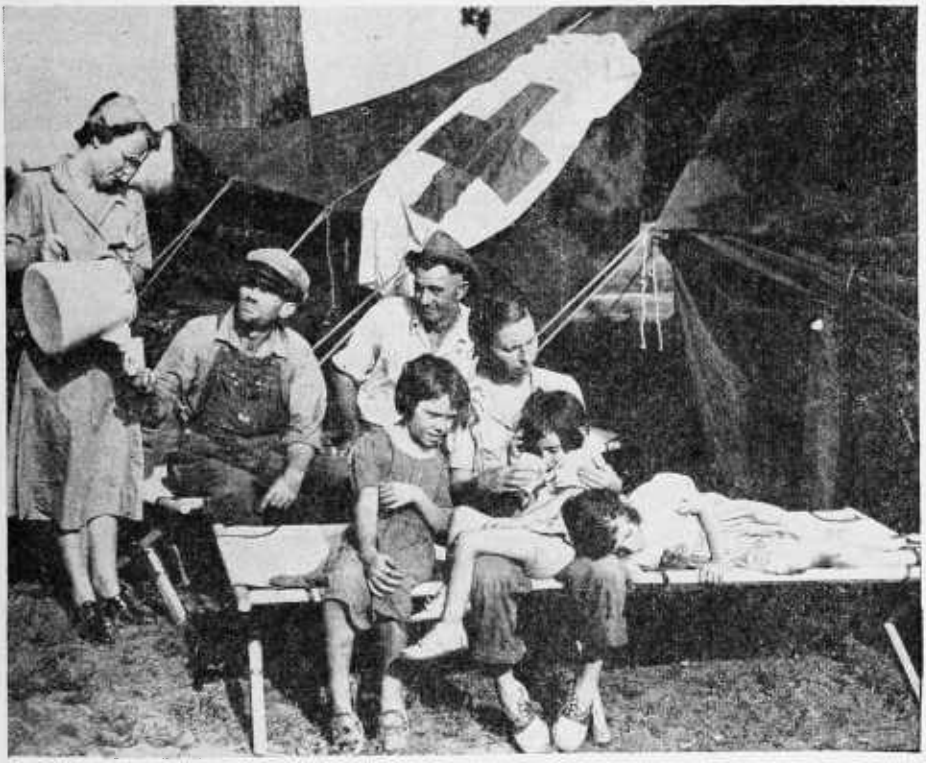
Some things may be done to anticipate floods, or new rises of water. Embankments and levees can be strengthened, watergates closed. Threatened spots may be reinforced with brush and posts or rock, ditches and drains opened, wells more or less protected by sandbag-

ging, culverts cleared and anchored firmly, buildings braced, fire hazards removed.

If water has not already entered the buildings, electric switches may be thrown, but do not take chances in the presence of water. Cut off gas. Protect fuel tanks. Put out heating and cooking fires before leaving buildings. Inflammable material should be removed and escape roads watched. Boats, if any, can be securely fastened where they will not be swamped or smashed. If possible, notify local authorities of your removal plans.

Move persons, household goods, livestock, machinery, and feed supplies to higher ground or upper stories of substantial buildings.

It is well to keep on the lookout against new flood crests and not to hurry back to the premises. Where safety precautions have been taken, however, it may be possible to begin cleaning out mud, silt, and debris as the waters recede and before the mud dries and cakes on floors and walls. As the waters go down, it is sometimes possible to float light buildings back into place or to new locations.



American Red Cross tent-city shelter for victims of 1951 flood.

FIRST STEPS

1. See that everybody is safe and out of danger of new flood crests, fire, and falling buildings.

2. Give full information and cooperation to local authorities, rescue squads, and local Red Cross chapter.

3. Arrange for shelter, food, clothing, transportation, medical supplies, and hospitalization (if available) for sick and injured.

4. Obey health regulations for personal and community protection against epidemics. Report any violations.

5. Test plumbing fixtures by flushing with buckets of water. Have sanitary disposal systems inspected by health authorities.

6. Have water supply tested. Boil or chlorinate emergency supplies of drinking water. Use no food that has been contaminated. Destroy fresh foods that have come into contact with flood waters, and discard or use other foods according to recommendations on page 12.

7. Start vigorous clean-up of premises as soon as floodwater recedes; remove doors, clean and dry house before trying to live in it. In entering buildings, use flashlights but no matches; do not turn on electric lights, furnace, or fixtures until tested by electrician; avoid nails, splinters, holes in floor or walls, and fall of wet plaster.

8. Drain or pump water from basements. Get stoves or heating plant to work as soon as possible. Heat hastens drying. Remove sediment from heaters, flues, and machines before using them.

9. Take all furniture and rugs outdoors and spread to air.

10. Start cleaning all bedding and clothing as soon as possible, using approved methods recommended on pages 12–14 for safety and to minimize damage.

11. Delay permanent repairs until buildings are thoroughly dried.

12. Use DDT and other insecticides against mosquitoes, flies, and vermin. Kill rodents. Avoid livestock diseases by moving stock to higher pastures.

13. Spread wet feeds to dry. Be cautious in feeding these to livestock. Watch piled hay for spoilage, heating, and fire hazard.

14. Dispose of animal carcasses promptly.

15. Submerged farm machinery should be taken apart and cleaned before it rusts. Motors or engines must not be started until cleaned out and dried.

16. Clear and open drains, ditches, channels, small streams, and tile-drain outlets. Drain standing floodwater, if possible. Plug breaks in dikes; use temporary structures to stop breaks, against recurrence of high water. Clear barbed wire and other debris from lots and fields.

17. Avoid overexertion and strain in lifting and moving heavy objects or loads.

18. Whenever kerosene is used, care should be taken to keep heat, sparks, and open flame at a distance to avoid fires.

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