PUBLIC HEALTH

Doctors Advise Iodine To Make Water Safe

PERSONS living in or traveling to flood areas where the water supply may be polluted temporarily can assure themselves of a safe drink of water by adding a drop of iodine to each glass of water. The ordinary tincture of iodine for first aid treatment of cuts does the trick of destroying typhoid fever or other harmful germs. A drop will make as much as a quart of water safe for drinking. Persons traveling can carry with them the little ampules made for first aid use.

The value of iodine for this purpose was discovered by Maj. A. P. Hitchens of the U. S. Army Medical School.

Science News Letter, February 6, 1937

PUBLIC HEALTH

"Nor Any Drop To Drink" But Clean-Up Job To Do

WATER, by world-old tradition the foe at once of thirst and fire and dirt, becomes paradoxically their ally when it goes on a rampage as in the present great flood. So we have been treated to the amazing spectacles of firemen unable to put out conflagrations because they were hampered by water, of the sanitary authorities of at least one great city forbidding all bathing, of public health officers begging people to abstain from the dangerous practice of drinking water.

The latter two situations have a common cause in the further paradox that of all organisms dangerous to mankind the most dangerous is man. In and about his body he carries the germs of his own undoing—particularly those that invade through the digestive tract, and through chance abrasions and wounds. Typhoid, the various dysenteries, blood-poisonings and infections—these are only a part of his constant suicidal equipment.

Normally man uses water copiously as his means of washing away from himself the overplus of his own uncleanness. His water sources are as well protected as possible by clean selection, by filtering, by chlorination. His drainage systems are designed for rapid clearance.

But water on anarchic rampage swirls up all his noxious refuse, dumps it into his clean-water reservoirs, leaves it in his houses and cellars, pollutes his milk depots with it. So after a flood man has a rather terrific cleaning-up job to do—and he must do it in a tearing hurry, yet thoroughly too, because the penalty for neglect or slackness is so swift and severe. Quicklime for the cellars, chloride of lime for the rooms of the houses, drainage of reservoirs and renovation of their filter beds, clean-pumping of wells and their chlorination and re-emptying, these are among the many routine things that must be taken care of as soon as the waters recede. They will provide plenty of work for those who need employment, though of course for a great part of the work public funds will have to be provided. In the meantime, public health officers plead and insist that no one in a flooded district shall drink unsterilized water.

Observance of these and other sanitary precautions enabled the country to get past the critical post-flood period in 1936 with a low disease incidence consonant with its position as a civilized nation, and it is hoped that as good a record may be maintained when the subsidence of the present deluge leaves us to confront the rising of the new danger.

Science News Letter, February 6, 1937

METEOROLOGY

Weather Bureau Plans For Better Flood Forecasting

EVEN as the enormous resources of the Federal government, in money and personnel, pour into the stricken flood area government officials are planning ahead and studying ways to mitigate the harm on that future date when floods again return.

In particular a plan for a better river and flood service for the U. S. Weather Bureau—first set up in the fall of 1935 and already used in a small way—should come in for most careful consideration. It can be recommended, for example, to those Senators and Congressmen from the states along the Ohio River who are now banding together for adequate protection to their home territory.

One of the few presentations of the new flood forecasting plan of Dr. Willis Gregg, chief of the U. S. Weather Bureau in Washington, was given, almost unnoted, last fall by Montrose W. Hayes, then in charge of the River and Flood Division of the Bureau. Within a month after telling the American Society of Civil Engineers at their Pittsburgh meeting about the plan Mr. Hayes died in Washington. Before his death, however, Mr. Hayes personally sent Science Service a copy of his address from which the following material is edited.

Flood forecasting, said Mr. Hayes, falls into two categories: (1) forecasting by gage readings and discharge rates, and (2) forecasting from reports of rain fallen or expected to fall. Gage readings are the oldest method and attain good accuracy when used on a large river far from the headwaters. Forecasts of two or three days can be made in upper valleys and forecasts of three or four weeks on the lower Mississippi River with the method.

In regions where numerous small streams flow the channels are too numerous to make gage measurements possible and rainfall measurements must be resorted to. In particular, pointed out Mr. Hayes, flood forecasts east of the Appalachian Mountains are of little value unless made by rainfall measurements.

"The standard of refinement of flood forecasts," declared Mr. Hayes, "is set by those who use the forecasts. This statement may cause some surprise, but its truth can be shown with ease. If the interests along a river can be protected by two-day forecasts verified in stage with an accuracy of about 2 feet it would be useless to spend the money necessary to provide three-day forecasts with an order of accuracy of less than half a foot. Upon the other hand if the latter and more accurate forecasts were needed, an effort would be made to find the money with which to make them possible. Owing to the unprecedented heights of the floods of March, 1936, when, in inundated cities, each 6 inches of rise meant an additional loss of enormous extent, the Weather Bureau now finds itself facing unprecedentedly widespread demands for river stage and flood forecasts of longer range, and of greater refinement as to stage verification, and in providing them many obstacles will have to be overcome.

"Changes in the present plan of operation will be necessary, and some outstanding deficiencies must be met. Some are simple and need not be mentioned. Others that are rather complex or difficult of attainment, but are essential to a river forecasting service of

a high order of accuracy, are brought to your attention as an explanation of why the Bureau can not immediately strengthen its river service to the extent known to be desirable. They are as follows:

"(1) The establishment of more and better placed rainfall stations, especially in head-water regions.

"(2) The installation of an adequate network of recording rain gages to enable the forecaster to know the intensity of the rainfall.

"(3) Surveys of the amount and condition of snow in the eastern mountains, from which little information concerning snow is now available. Reliable and prompt rainfall reports are not sufficient when the mountain regions hold a great amount of water in the form of snow, which is likely to be released by the rain.

"(4) Arrangements for a more reliable transmission of rainfall and river stage reports from the substations to the district centers. Except in very unusual cases the telephone and telegraph wires answer all purposes with a great degree of satisfaction, but in the unusual cases, which are emergencies, the greatest need for the reports exists, and a river forecaster without information from the drainage area above him is helpless. The problem is difficult to solve.

Cooperating "Hams"

"It has been suggested that radio stations should be established in the flood producing regions, manned by Weather Bureau employees, to transmit reports promptly under all conditions to the forecasting center. This would be a solution, but it is felt that the cost would not be justifiable; certainly it would not be until it could be shown definitely that the Weather Bureau had exhausted every other and less costly means for having reports transmitted satisfactorily. One plan proposed and being investigated is to have an arrangement under which amateur radio operators would transmit reports in times of emergencies.

"(5) Divide the country into eight sections for river administrative and forecasting purposes. Have a staff of men in each section to handle the river work. These men should be charged with placing and supervising the operation of the substations, the transmission of reports to the forecasting centers, with coordinating all phases of the work, with investigating the requirements for forecasts and arranging for meeting the requirements, with cooperation with other organizations engaged in river work, and with developing formulas for forecasting. Through a close cooperation with the Geological Survey, discharge data are becoming available to the Weather Bureau for all of the rivers of the country, and these data can be used to a great advantage, in combination with Weather Bureau data, in the development of formulas that will enable considerable refinement to be introduced into the river stage and flood forecasts.

"The foregoing list of requirements for a river forecasting service of a high order of accuracy is not merely something to be desired and not attained. Upon the contrary, it represents a plan set up by the Chief of the Weather Bureau more than a year ago, and a modest beginning toward its accomplishment was made on July 1 of this year. Small staffs have been placed both in the Missouri Valley and the upper Mississippi Valley, and other parts of the country will be taken care of as it becomes possible to do so."

Science News Letter, February 6, 1937

CLIMATOLOGY

Great Floods on Great Rivers Encountered by Explorers

GREAT floods on America's great rivers are no new thing under the sun. They are recorded by the earliest Spanish explorers, who found that the Indians had adapted themselves to the flood problem by building great mounds as artificial hills of refuge for emergencies.

The chronicle of the expedition of Hernando de Soto, who discovered the Mississippi, tells of a terrific flood on the lower river, near Memphis, which lasted from mid-March until the end of May, in the year 1543. De Soto and his men had landed at Tampa Bay, Florida, traversed the states of Florida, Georgia, the Carolinas, and Alabama. Then they discovered and crossed the Mississippi, which De Soto called the Great River. After exploring Arkansas and Louisiana, the Spaniards again came back to the Great River, where their leader fell sick and died and was buried in its waters so that hostile Indians might not find and dishonor his body.

It was during their sojourn on the river that they were given the first view of a Mississippi flood that white men's eyes had ever beheld. Here is how the chronicler, Garcilaso de la Vega, was impressed:

"Then God, our Lord, hindered the work with a mighty flood of the Great River, which, at that time—about the eighth or tenth of March—began to come down with an enormous increase of water; which in the beginning overflowed the wide level ground between the river and the cliffs; then little by little it rose to the top of the cliffs. Soon it began to flow over the fields in an immense flood, and as the land was level without any hills there was nothing to stop the inundation.

"On the 18th of March of 1543, which that year was Palm Sunday, when the Spaniards were marching in procession the river entered with ferocity through the gates of the town of Aminoya, and two days later they were unable to go through the streets except in canoes.

"The flood was 40 days in reaching its greatest height, which was the 20th of April, and it was a beautiful thing to look upon the sea where there had been fields, for on each side of the river the water extended over twenty leagues of land and all of this area was navigated by canoes, and nothing was seen but the tops of the tallest trees.

"On account of these inundations of the river the people build their houses on the high land, and where there is none, they raise mounds by hand, especially for the houses of the chiefs; the houses are constructed three or four stages above the ground, on thick posts that serve as uprights and between uprights they lay beams for the floors, and above these floors which are of wood, they make the roof, with galleries around the four sides of the house where they store their food and other supplies, and here they take refuge from the great floods.

"The floods do not occur every year, but when in the regions where the rivers have their source there have been heavy snows the preceding winter with rains in the following spring; and thus the flood of that year of 1543 was very great on account of the heavy snow which had fallen the preceding winter. These floods occur every 14 years, according to what an old Indian woman told us."

Science News Letter, February 6, 1937