

SCIENCE NEWS

Science Service, Washington, D. C.

THE BACILLUS OF TRACHOMA

ONCE more modern science scores against disease. The isolation of a small bacillus, believed to be responsible for trachoma, the disease that has blinded thousands of Indians, has been announced by Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, New York.

Five Indians with trachoma from the Albuquerque Indian School, whose eyes had been operated on, furnished the cultures with which Dr. Noguchi was able to produce the disease in monkeys. From these he recovered the germ and inoculated other chimpanzees that in turn developed the characteristic inflammation of the eye. This is considered rather conclusive proof that the guilty organism has been found. A preventive vaccine and curative serum have not developed, but this is the next logical step in the investigation of the disease.

Dr. Noguchi became interested in the trachoma problem through Dr. F. I. Proctor, of Boston, and began this research with the cooperation of Dr. Polk Richards, of the U. S. Office of Indian Affairs, less than a year ago.

Trachoma is a disease of unhygienic living, widely prevalent in Egypt, Asia and among the Indians of this country. It is one of the few diseases that absolutely prohibit an immigrant from entering the United States. Of 38,111 Indians in the Southwest examined for trachoma in the fiscal year ending June 30, 1925, 7,236 were found to be suffering from it and among these it was found necessary to operate on 4,285. About 19 per cent. of the Indians of the Southwest, it has been estimated, are afflicted with the disease.

This first step in the conquest of trachoma was hailed as a major medical achievement by doctors and scientists at the recent meeting of the American Medical Association. Dr. Noguchi has isolated and cultivated the causative organism of yellow fever and made important contributions to the subduing of syphilis, smallpox, rabies and oroya fever.

FLOOD HEALTH MEASURES

PESTILENCE, riding the crest of the Mississippi Valley flood, is being battled by health and sanitation forces on a scale unparalleled in the peace-time history of this country. Reminiscent of measures instituted during the world war in army camps and refugee centers is the gigantic program being advanced by the American Red Cross and cooperating agencies.

Dispatches daily to national headquarters of the Red Cross at Washington state that 95 per cent. of the total population of the flood area have had at least one injection of typhoid serum and that half a million will be immunized against smallpox and typhoid before the close of emergency relief work.

Dr. William R. Redden, Red Cross medical director, states that 8,000 are being vaccinated daily against smallpox and 10,000 against typhoid. Thousands have been given quinine doses as a precaution against malaria and

between 6 and 7 tons of quinine will be administered for this purpose as mosquitoes begin to breed in the stagnant back-water.

Ninety-two nurses, fifty-eight doctors and thirty sanitary engineers are on duty in the seven states affected, according to Dr. Redden, and as a result outbreaks of disease are being checked satisfactorily, with actually less disease, in Dr. Redden's opinion, than under normal conditions.

Following a recent meeting in Memphis, the relief base, attended by health and sanitation experts of the Red Cross, American Medical Association, U. S. Public Health Service and other agencies, plans were announced to take care of sanitary conditions made acute by the recession of the flood in Arkansas and Mississippi.

Dr. Redden wired headquarters that an exhaustive survey of the terrain was made during the week, which showed that Arkansas has 15,000 head of dead livestock and Mississippi 25,000. To neutralize this menace, 50,000 pounds of chlorinated lime will be used in the two states and one carload of dehydrated lime per county in addition. One carload of crude oil per county will be spread over stagnant waters to prevent the maturing of mosquito larvae.

Emergency county health units are being established in the two states, through which the Red Cross will carry on a concentrated battle against disease, lasting from 30 to 60 days.

Maneuvers of the health forces are often spectacular, involving the use of airplane and radio. A call for typhoid and smallpox serum from Winnsboro, La., brought into action a Coast Guard airplane which set out from Natchez. It was necessary for the pilot to transfer to a train at Clayton, getting as far as Sicily Island, where the flood blocked rail travel. The guardsman procured a second-hand car in which he proceeded within two miles of his objective. Forced to abandon this he advanced on foot through water always knee-deep, sometimes deeper, arriving after nightfall with the supplies.

"Serious epidemic dysentery; must have medicine immediately." Across 60 miles of ether this message was flashed to Red Cross headquarters at Memphis. Within half an hour a Navy seaplane, loaded with the medicine, headed for Bruin, Arkansas. An hour later doctors in the camp were administering it. Without a plane it would have taken several days of tedious travel and it is probable that many lives would have been lost.

OBSERVATIONS OF THE LUNAR ECLIPSE
IN CANADA

THE Royal Canadian Mounted Police will join with representatives of the Hudson's Bay Company in Canada, Catholic missionaries to the Eskimos, fur trappers and representatives of the U. S. Weather Bureau and Signal Corps in Alaska, to make scientific observations of the total eclipse of the moon on June 15. This announcement

has been made to Science Service by Dr. Willard J. Fisher, of the Harvard College Observatory. These groups will make particular note of the weather conditions in Canada in the early morning hours of June 15.

Lunar eclipses occur when the moon gets within the shadow cast by the earth. As the moon is illuminated only by the sun, it appears darker under such conditions than at time of full moon. It would disappear entirely were it not for the earth's atmosphere.

On a clear evening, as the sun sets, we see the sun for a little while after it has actually gone below the horizon, because the atmosphere bends the light rays around the horizon. A similar effect is observed when a stick, partly immersed in water, looks bent. In the same manner, the earth's atmosphere bends some of the light around it and into its shadow, giving the eclipsed moon some illumination. A sunset appears red because the thick layer of air absorbs the blue rays and permits only the reddish rays to pass. The light that gets through to the earth's shadow to illuminate the eclipsed moon has to pass through twice as much air as does the light from an ordinary sunset, with the result that the eclipsed moon shines with a copper-red glow.

As clouds in the part of the earth's atmosphere through which the light passes absorb a certain amount of it, Dr. Fisher has called in the assistance of the Canadian Mounted Police, the missionaries, and the other groups to observe weather conditions along a line from Great Slave Lake, in the Canadian Northwest Territories, across Baker Lake, which drains into Chesterfield Inlet, on the west coast of Hudson Bay, and down to Nova Scotia. It is along this line that the light which is bent into the earth's shadow will just graze the earth. Observations of the state of the atmosphere, whether clear or cloudy, at 3:24 A. M., eastern standard time, when the moon is most completely immersed within the earth's shadow, may be checked with observations made elsewhere of the eclipse itself, for as the moon will just be setting at the time, and the sun rising in the east, the eclipsed moon will hardly be visible to the Canadian observers.

GIPSY MOTH CONTROL

GIPSY moth control to save New England trees has met with a new complication. One of the most important parasites of the gipsy moth which the U. S. Bureau of Entomology imported from Europe is being hampered in its good work by the presence in this country of insects which have recently attacked it. The damage being done is extensive. In the majority of cases, 65 or 70 per cent. of the beneficial parasites are being destroyed. About 35 species of insects are attacking the beneficial one, but the real damage is being done by only a few, including in their number three species of chalcid flies new to science, according to the U. S. Bureau of Entomology.

"The situation is illustrative of the difficulty of natural control," said Dr. L. O. Howard, chief of the bureau. "To establish imported parasites of pests of foreign origin is not the simple thing that people think. Nearly all primary parasites are subject to attack from parasites of their own. In bringing in beneficial parasites the entomologists are careful not to import with them their natural

enemies. But it happens that they often belong to groups which are represented in the United States by parasites of native insects. These have their own parasites which are quick to attack the European importations related to their native host. This intricacy of relationship between species of insects greatly complicates the business of importing the parasites of pests accidentally brought into this country."

PUBLIC HEALTH AND THE SURVIVAL OF THE FIT

"SURVIVAL of the unfit," a stock objection by hard-boiled critics of public health work, was declared to be a bogey conjured up by the perfervid imaginations of persons to whom a little learning has proved a dangerous thing, by Professor H. S. Jennings, of the Johns Hopkins University, one of the world's foremost students of evolution, genetics and eugenics, who spoke at the meeting of the National Tuberculosis Association in Indianapolis.

Fitness, Professor Jennings pointed out, is only a relative term, and an individual at whom the finger of scorn is pointed, as being "unfit" so far as resistance to tuberculosis or some other ailment is concerned, may be very "fit" indeed when it comes to doing useful work in the arts, sciences or business. Wipe out the disease, as yellow fever has been wiped out, diphtheria is being wiped out, and as tuberculosis can be, and the "unfitnesses" of the persons now susceptible to them automatically disappear, for there is nothing left for them to be "unfitted" to. Therefore to argue that nothing should be done to control diseases that take large toll of human life is not merely harsh and inhuman, but silly, in the opinion of Professor Jennings. "For most of the matters with which the public health worker deals there appears to be no indication whatever that the individuals preserved are undesirable, or at a disadvantage in a world in which the attacking agent has been controlled, no indication that defective genes are playing an important rôle."

LEARNING BY ADULTS

A MAN or woman under 50 years of age should seldom be discouraged from trying to learn anything which he or she really needs to learn by the fear of being too old, Dr. E. L. Thorndike, professor of educational psychology at Columbia University, said at the meeting of the American Association for Adult Education in Cleveland. To a lesser degree, this is true after 50 years also, he added.

Dr. Thorndike presented results of experiments in which persons 35 years and over, averaging 42 years, were compared with persons 20 to 24 years old, averaging 22, in their ability to learn acts of skill and to acquire various kinds of knowledge.

In learning Esperanto, an artificial language constructed on logical principles, the older group learned about five sixths as fast as the younger. Both groups learned more rapidly than children.

In learning reading, spelling, arithmetic and other elementary school subjects, adults of 42 progressed about five sixths as fast as the adults of 22. Both groups probably learned faster than they would have learned the same things as children at the age of 12, for they learned more

per hour of study than children comparable to them in brightness are able to learn.

Extensive experiments with adults learning algebra, science, foreign languages and the like in evening classes, and with adults learning shorthand and typewriting in secretarial schools, support the general conclusion that ability to learn rises until about 20. Then, perhaps after a stationary period of some years, learning ability slowly declines. The decline is very slow, however, roughly about one per cent. per year. The chief reason why adults seldom learn a new language or a new trade is not the lack of ability, but the lack of opportunity or desire.

ITEMS

KILLING off one disease through the action of another is a medical method of increasing interest. Treatment of the paralytic forms of syphilis with inoculations of malaria has had a three years' tryout at the Mayo Clinic and was pronounced the most valuable method used thus far, by Dr. Paul A. O'Leary, of Rochester, Minn., at the meeting of the American Medical Association. Many more years of observation will be necessary, however, Dr. O'Leary emphasized, before it will be justifiable to speak of the "cure of paresis." Results must now be estimated in terms of arrest or remission, he said, as shown by the ability of patients to resume their former mode of living. The malaria treatment is not without risk as the mortality of five per cent. recorded by Dr. O'Leary shows, but he believes that this rate compares favorably with that of any untreated group, observed for the same length of time. The greatest improvement was noted where the malaria was introduced early in the course of the paresis, but striking results were cited by the Rochester specialist in cases of four years' standing.

In a statistical study of conditions since the passage of the eighteenth amendment, presented at the American Medical Association recently, Dr. Leonard G. Rowntree, of the Mayo Clinic, Rochester, Minn., stated that alcoholism has made a striking decrease since 1917. Cirrhosis of the liver, a degenerative disease, one form of which is due to alcoholism, is also decreasing in about the same proportion, the Minnesota doctor's figures showed. The contention that urban population is notoriously wet, and rural sections notably dry, is borne out by the fact that both these conditions are found to occur most frequently in cities and are about half as prevalent in the country as in the city. Deaths from too much booze in New York in 1920 were only one seventh of those in 1916 and deaths from cirrhosis fell off more than half. In the dry and rural state of Kansas the death rate for both conditions has remained about the same as before the war. It is interesting to note, said Dr. Rowntree, that the highest mortality rate for alcoholism and cirrhosis recorded in Kansas in the last fourteen years represents the low-water mark for deaths from the same cause during the same period in New York.

DR. JAMES W. GIDLEY, paleontologist of the U. S. National Museum, has returned from a partially successful search for elephant bones to complete a great mammoth

skeleton being assembled for exhibition purposes. Near Alva, Oklahoma, he found portions of a small elephant which were of considerable scientific interest but of a different species from the composite skeleton which the museum experts are mounting. This particular variety of mammoth came from Florida and attained a huge size, twice as large as the ordinary elephant of to-day. A prehistoric relative of the armadillo, probably a hitherto unknown species about as large as a cow, was among the skeletons. The thorough exploration of Oklahoma for animals of past ages is urged by Dr. Gidley. He states the state is rich in rock formations containing evidences of the life of 500,000 years ago.

THE pine forests of the future will not perish in infancy if the recent research efforts of J. Stewart Wiant, of the New York State College of Agriculture, are put to practical use. Hitherto there has always been a heavy mortality in pine plants started from seed in forest nurseries and later set in the hope that they may become huge trees a century or so later. The tender young plants are easily killed by parasitic soil fungi. Dr. Wiant finds that soil treatment with several chemicals, especially with some recently discovered chlorophenol mercury compounds, destroys these parasites and permits the baby pines to develop until they are strong enough to be secure against these enemies.

LACE-MAKING has become a Chinese home industry of considerable importance, according to figures published in a survey of industrial and commercial conditions in China just issued by the U. S. Department of Commerce. The customs returns show lace exports amounting to over \$4,000,000, and this probably does not cover the entire quantity. The Irish lace industry was introduced into Swatow as recently as 1920 and it is said that the laces produced are equal, if not superior, to those originally made in Ireland. In several cities around Shanghai, many Chinese women and girls are busy in making filet lace. The low cost of Chinese labor makes the retail price, even with the high tariff, much cheaper than the hand-made laces of Europe.

THAT tin, the metal with which most metallic food containers are lined, has absolutely no effect on the human body is the finding of Drs. E. W. Schwartz and W. F. Clarke, of the U. S. Department of Agriculture. Selecting asparagus and pumpkins as two kinds of preserved food which might be expected to enter into chemical union with the tin lining of the cans in which they had been preserved for long periods, they have been unable to demonstrate the slightest unfavorable effects of the vegetables when they were fed to guinea pigs. Further, they administered tin metal in two-gram lots, more than all the tin on several large cans, to human beings over a period of five days. By the most refined analytical methods they could find no trace of tin in the blood stream, indicating that none had been absorbed by the body. It is also proposed to determine the effect on steel cans lined with enamel instead of with a tin coating.