SCIENCE NEWS

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RESEARCH ON TUBERCULOSIS

AN international attack by the governments of the world on the great white plague was suggested by Dr. William Charles White, of the U. S. National Institute of Health, at the meeting in London on July 27 of the British Medical Association. Dr. White pointed to the International Postal Union as the best example of international governmental cooperation so far achieved.

"Among the great economic problems with which the world is faced, tuberculosis stands probably at the top of the list," he continued. "It was the first disease problem to reach the status of International Congress and Conference and to-day no civilized nation is without its national, state, county and municipal organization for the prevention and cure of tuberculosis."

Each nation is trying to solve the problem in its own way, but Dr. White thinks cooperation, which is resorted to during war and other periods of international stress, would bring better results. At present even the best utilization of available knowledge brings the disease under only partial control, and that with great expenditure of effort and money. In Dr. White's opinion, cooperative search for more knowledge about the disease is required for a real conquest of this plague.

Dr. White described the plan for research being followed by the National Tuberculosis Association, a volunteer organization in America. He is chairman of the association's committee on medical research which directs the work along this line.

Under this plan, investigators in various laboratories are studying the living chemistry of the different organisms of the tuberculosis germ. Large quantities of each of them are grown on standard culture material. Chemists are analyzing these germs and the material on which they grow. Biologists are studying the effects on tuberculous and non-tuberculous animals of the different chemical constituents of these germs that have already been obtained by chemical analysis. In addition, the living chemistry of the cells in the animal's body in which the t.b. germs live is being studied, and how the chemical reactions of the cells are changed after they are infected with the tuberculosis organism are being investigated.

On the more immediately practical side, investigations have been made to obtain standards for the skin test for susceptibility to tuberculosis and for strength of x-rays used in diagnosing the condition and following its progress. In the first instance, the chemical substance responsible for the reaction in the skin test has been isolated chemically. In the second, means have been developed for measuring the efficiency of the x-ray machinery from the electric current to the film on which the shadows are shown. These two developments give a better means of comparing notes on the progress of the disease and the effect of various kinds of treatment. Extension of similar research throughout the world was urged by Dr. White.

THE EFFECTS OF ALCOHOL ON THE OFFSPRING OF RATS

ALCOHOL does not cause defective children of guinea-pigs that are kept intoxicated six days out of seven for years on end, Miss F. M. Durham, of the National Institute for Medical Research, has concluded after repeating experiments of Dr. Charles R. Stockard, American biologist. Neither does extreme and constant intoxication of guinea-pig mothers and fathers result in families smaller than those of sober guinea-pig parents. Miss Durham considers that she has definitely disproved Dr. Stockard's suggestion that alcohol in circulation produces heritable permanent deterioration of the race by injuring the germ plasm even when the intoxicated mother and father guinea-pigs do not show any obvious damage. Miss Durham's researches which have extended over many years are reported in a publication of the Medical Research Council. Miss Durham suggests that a vitamin deficiency or inheritable strains in the animals used by Dr. Stockard may have caused his results.

In 1924, Dr. Charles R. Stockard, of Cornell University Medical School, New York City, reported as the result of guinea-pig experiments that alcohol probably eliminates the unfit and that races addicted to its use therefore outstrip the moderate races. He found higher infant mortality, lower birth-rates and more defective children among the offspring of guinea-pigs that were kept intoxicated with alcohol fumes most of the time for as long as six years. He attributed these injurious effects to the alcohol.

But Dr. Stockard at that time said: "It is highly improbable that human beings have ever injured or eliminated their normal resistant germ cells with alcohol. Alcohol probably has eliminated some of the bad. Those nations of men that have used the strongest alcoholic beverages through many generations have now, from a standpoint of performance and modern accomplishments, outstripped the other nations with less alcoholism in their history."

THE FIRE MENACE OF THUNDER STORMS

A FEW minutes of rain often is all that marks the difference between a lightning storm that will start a forest fire and a "safe" storm that will not.

This is one of the fire-weather facts appearing from a study of weather and forest fire records in the northern Rocky Mountains, compiled by H. T. Gisborne, of the Northern Rocky Mountain Forest Experiment Station, and reported to the U. S. Weather Bureau.

Mr. Gisborne undertook his statistical research in order to provide forest administrators, and especially fire fighters, with data that will enable them more efficiently to meet the late-summer menace of lightning-caused fires. In the northern Rockies, and in many other parts of the West, lightning is by far the largest

single source of forest fires, exceeding even careless campers and spark-scattering lumbermen's engines.

Mr. Gisborne's study was made on a five-year record compiled of data gathered by observers on over 200 mountain peaks in three states. He found that the average number of thunderstorms per summer, eighty-eight, was three or four times as large as had previously been thought to be the case, based on observations from lowland stations. He also found that the danger from a storm bore a direct relation to the duration of rainfall both before and after the lightning began to flash, as well as to the number of lightning strokes that reached the ground.

Lightning storms that caused fires averaged 8.7 minutes of rainfall before the lightning began, whereas storms that did not start fires had 14.6 minutes of rain before the lightning. Fire-causing storms followed the lightning with only 30.8 minutes of rain, on the average, while "safe" storms kept up the rainfall for an average of 44 minutes. These figures are regarded as quite significant, for the pre-lightning rain wets the dry litter on the ground if it falls long enough, while the post-lightning rain, if sufficient, will put out fires which the lightning has started.

One assumption, though logical, was disproved by Mr. Gisborne's study. This was that the "dry" thunderstorm, which sends little or no rain to the ground beneath, is especially dangerous. Figures showed that these storms are comparatively rare, and that when they do occur they start no more fires in proportion to their numbers than do rain-bringing thunderstorms. This is because the lightning in "dry" storms passes mostly from cloud to cloud, not many flashes striking the earth.

It is usually possible for an observer on a mountain-top to tell, even at a considerable distance, whether a lightning flash leaps from cloud to cloud or whether it strikes the earth. This is a matter of considerable practical importance, Mr. Gisborne's study indicates, for in the nonfire-starting storms 76 per cent. of all flashes were of the cloud-to-cloud variety, whereas the storms that started fires sent 44 per cent. of their lightning flashes to the earth.

SLAUGHTER OF WILD DUCKS IN EUROPE

By Dr. Theodor Ahrens

EUROPEAN conservationists and zoologists are watching the development of America's efforts to save its wild ducks with much sympathy and considerable interest. The effort to put down the commercial exploitation of game in America is being followed especially closely, because Europe, with a smaller wild-life population and a much more intense pressure for food by the human population, has permitted a much more extensive killing of wild ducks for market purposes.

A European institution that has no American counterpart is the commercial decoy pond. Decoy ponds are bodies of water to which ducks are attracted, sometimes with the additional lure of food. On their shores are structures of various types which serve as traps. The ducks lured into them, leave only as carcasses headed for the market. The annual drain of these ponds on the European wild-duck population is a serious one.

In Germany there are at present eleven decoy ponds, in Belgium there are four, but the average is not stated; England has twenty-one such ponds but the average kill is only about 600; the English use the ponds as a sport, not for gain!

Holland has the greatest number of ponds, the number of the catch of which has been, until recently, suppressed in the interest of the Dutch canning industry, which takes the catch and has built up a profitable export trade thereon. Now, at last a Dutch ornithological organ has published a statement. There are, according to it, 145 ponds in Holland, most of which are in the provinces of Gelderland, South Holland, and North Brabant. The average annual catch is 300,000 ducks.

The open season lasts from July 27 until February 14, sometimes even until March 13. The bands or banded birds have shown that the majority of the ducks caught in Holland come from Scandinavia and Finland. In the long run the supply will unquestionably become diminished at the present rate of destruction.

It is obviously well-nigh impossible at present to expect much remedy, as the Dutch Government is unwilling to interfere with a profitable home industry; yet if the open season were only somewhat shortened some relief would ensue. An effort will therefore be made at the coming International Conference to bring about certain changes in the Paris Bird Protection Convention of 1902, to reduce the open season to a period lasting from September 15 to January 31.

ITEMS

BUTTERFLIES' legs contain the insects' organs of taste, and they are far better than the human tongue for detecting the presence of sugar. At the University of Minnesota, Dr. Almeda Louise Anderson has been experimenting with a number of butterfly species, testing each for the most dilute solution of common sugar that would make it extend its proboscis. The taste "threshold" for different butterflies, or even for the same individual at different times, varied a good deal; but the most sensitive tasting legs were found finally on a common red-and-black monarch butterfly. They could detect sugar in a solution 1,200 times more dilute than the weakest that would taste sweet to a human tongue. A full statement of Dr. Anderson's results is to be published in *The Journal of Experimental Zoology*.

GALL-FLIES flew in the Miocene, back in the times when wild camels and three-toed horses scampered in the country that is now Oregon. This is indicated by an interesting fossil oak leaf that has been studied by Arnold D. Hoffman, of the University of Chicago. Split out from between layers of shale, the leaf impression shows 25 flattened-down swellings closely resembling the hypertrophied growths caused on leaves and stems of present-day plants by the little wasps called gall-flies, who lay their eggs in plant tissues to give their young grubs an abundant food supply.