

## SCIENCE NEWS

## A NEW TREATMENT FOR TUBERCULOSIS

*The London Times*

PROFESSOR DREYER, of the Pathological Department of the University of Oxford, recently delivered at St. Mary's Hospital a lecture on "New Principles in Bacterial Immunity," which may well prove to be the beginning of a vastly important advance in the treatment of tuberculosis and some other diseases.

It is well known that the efforts to combat tuberculosis by means of vaccines have not, hitherto, met with the success which was at one time confidently anticipated. A similar lack of success has attended the attempts made to deal with certain other organisms. Professor Dreyer, at the outset of his lecture, laid it down as a general proposition that bacteria which are "acid-fast"—that is, which "hold" an acid stain—and bacteria which are "Gram-positive" (another staining reaction), resist strongly the influence of vaccines designed to overcome them.

This "acid-fastness" has been clearly proved to reside in the fatty or waxy sheath which surrounds germs of this type, for if the bacillus is "de-fatted" or deprived of its fatty protection, it no longer retains the acid stain. It therefore occurred to various workers that the fatty sheath or envelope may, in the case of the germs administered as a vaccine, prevent the effectiveness of this vaccine by shutting in the poison of the germ itself.

Vaccination, of course, depends on giving a dose of a bacterial poison, and thus inducing the body to make a large amount of antidote to that poison. If, however, the dose of poison is enclosed in an impervious sheath it may remain ineffective. In other words, no antidote will be prepared against a poison which has not been "set free."

Professor Dreyer finally evolved a method of depriving the germs of tuberculosis of their fat, and at the same time killing them. Their poison, however, remained in their bodies. These were then injected into various animals afflicted with various forms of tuberculosis. He concludes from these experiments that they justify his view that treatment with "de-fatted" germs "brings about a definite improvement, both general and local, in animals infected with *B. tuberculosis*."

Meanwhile, Dr. A. C. Inman, of the Brompton Hospital, began, last April, to treat two cases of human tuberculosis with the "de-fatted" antigen.

"The patients, under the care of Dr. Bosanquet, had been under observation for a long period and were both steadily getting worse. They were selected as being cases only likely to improve if some extra aid could be brought into application. Even in such active cases no local or focal reaction followed the initial inoculation, nor was there any appreciable febrile reaction.

"Encouraged by the result of the first few inoculations, it was decided to undertake the treatment of a case of acute toxic pulmonary tuberculosis in a young

subject aged 21 years. Again no local, focal or general reaction followed the small initial doses of the antigen; indeed, these resulted in lowering of the temperature and some amelioration of the general condition. From the nature of the disease under consideration, patient judgment and the lapse of time will be necessary before any opinion can be expressed on the permanent value of the method of treatment. In due time, whatever be the result, a detailed account of all cases treated will be published."

Professor Dreyer added that Drs. Fildes and Western at the London Hospital were also using his "de-fatted" antigen, and had written to him as follows regarding sixty cases of tuberculosis of various types:

"Most of these cases have been under our personal observation for considerable periods up to five years, and have been selected for treatment as having shown little improvement under treatment with tuberculin B. E. (Koch). Improvement has taken place in nearly all cases and is, in our opinion, of an order which exceeds obviously that obtainable by any other form of treatment which is applicable to these conditions. We have not observed any toxic effect following on the inoculations."

Professor Dreyer dealt also with his work on some other microorganisms, including those of anthrax and typhoid.

## IMPORTED DISEASES AND PRIMITIVE PEOPLES

*News Bulletin of The National Geographic Society*

ANNOUNCEMENT that influenza is ravaging the natives of the western coast of Alaska and has resulted in many deaths, recalls that one kind of tragedy has always followed the advance of civilization. Primitive people in out-of-the-way places, once entirely isolated from civilization, have been threatened with extermination by even such ordinarily unimportant "civilized" diseases as measles. It is not a matter of unhealthy regions, for the scenes of such tragedies often have climates bracing and upbuilding to whites and to such natives as escape the first onslaught and who develop immunity to the new diseases.

The natives of Alaska had in their habits of life a marked handicap in fighting disease. They lived—and many still live—in wooden looses partly below the ground level. These had their circle doors always closed and were without windows. There was one opening in the roof out of which the smoke from a central fire was supposed to find its way. As many as 50 and 60 persons lived in the larger houses and competed for the little available oxygen amid reeking odors of rancid oil and decaying fish and sing eggs. Sanitation were unknown all debris and refused be disposed of was merely thrown a little way from the doorway.

When civilization automatically transplanted its diseases to Alaska, the field was all too fertile and the "crop" grew rankly. Tuberculosis is now continually

at work killing off the native population, but the most spectacular inroads have been made by measles and smallpox, which have raged from time to time since 1842 like fires in a dry thicket. By the time an immunity at all comparable to that of the civilized world was developed, nearly half the population of many regions had been swept away. In later years the work of the United States Public Health Service has done much to raise the health standard among the natives.

Exactly the same thing happened in that paradise of isolation, the islands of the South Sea. But there the tragedy did not overtake natives weakened by unsanitary living, but rather men and women of ideal physique, living largely in the open air. Measles, smallpox and tuberculosis had never been known among them or their ancestors, and their bodies simply had no weapons for the unknown fight. The Hawaiian Islands and the Marquesas have suffered more perhaps than any of the other island groups. The tragedy still proceeds. In the Marquesas there are now about eight native deaths to one birth, and it is predicted by observers of conditions that in another decade not one full-blooded Marquesan will be alive.

## SOUNDINGS ACROSS THE PACIFIC

*Science Service*

A LINE of soundings across the Pacific Ocean from San Francisco to Australia, taken at intervals of about five miles by the sonic depth finder, will be run this summer by the new scout cruiser *Milwaukee*, soon to leave on her "shaking down" cruise. The itinerary of the cruise is now being prepared by the Navy Department, and it is expected to include a visit to Melbourne or Sydney.

The Pan-Pacific Science Congress will meet in Melbourne from August 13 to 22, and in Sydney from August 23 to September 3. It is intended to have the results of this unique survey of the Pacific ready for presentation at the congress, following the *Milwaukee's* voyage.

Other new vessels of the navy are being equipped with the sonic depth finder and when sent out on their trial cruises will make soundings in many widely separated parts of the sea. Older vessels will be so equipped when undergoing repairs or overhauling.

Many new soundings are now being made by naval vessels equipped with the new sounding apparatus, which measures the depth by measurement of the time necessary for a sound wave to travel to the bottom and back again. Soundings may be taken while traveling at full speed. The Hydrographic office is busy recording the results of these new surveys which agree quite closely with older soundings made by line, but which owing to the rapidity with which they may be taken, are opening up many partly charted and little known regions of the sea.

## OIL IN SOUTHERN VIRGINIA

*Science Service*

A RECENTLY discovered oil deposit is creating much interest at the U. S. Geological Survey. Oil has been struck in small quantity in the toe of southwestern Virginia, not far from the Kentucky border. Investigations

to determine if the oil is present in commercial quantity are now being carried on.

The strike is about two miles east southeast of Rose Hill, Lee County, and is some hundreds of miles south of the wells of the West Virginia field. Its geological interest is in the fact that it is in the Appalachian valley where the presence of oil has been doubted by geologists, and because it is present in a geological formation—the Clinton—which is entirely overlaid by the Knox dolomite, a formation that normally lies 5,000 to 6,000 feet below the Clinton.

Oil seepage has been known in this region for several years and an experimental well was recently drilled to a depth of about 300 feet. A fair amount of oil was discovered which upon analysis was found to resemble that of the western Pennsylvania field in composition. Salt water which was found immediately under the oil has flooded the well so that the oil flow has ceased.

Drilling of another well, 2,000 feet deep, is soon to be begun near the site of the first drilling. This may determine the commercial possibilities of the new pocket. Isolated pockets of oil are known to exist in other parts of the country where oil in paying quantities is not found, and it is possible that this new find may be merely another example of such sporadic occurrence. On the other hand, it is also possible that the recent discovery may be the first indication of a new and extensive oil field in a region where no oil was supposed to exist.

## ITEMS

*Science Service*

THE past month of June was the hottest experienced in the northeastern quarter of the United States in several decades, and one of the hottest in the 50 year record of the Weather Bureau. From the plains states to the Atlantic and from the Gulf States to the Canadian boundary the monthly reports show many records broken for the month. In many places the month was as warm as the average July. Baltimore reported the hottest June on record, Washington the hottest since 1892, when the present record was equalled. It has not been exceeded in that city since 1874.

FREE use by the public of a new water-resisting glue developed at the United States Forest Products Laboratory here has been guaranteed by the United States Patent Office. Any person may obtain the formula by applying to the government for it. No concern can patent and secure exclusive rights to the glue, which is a perfection of the casein-silicate glue developed during the war, Forest Service officials said. An improvement consisting of the addition of certain copper salts to the old formula give it better strength, water resistance, and working properties. The formula was given to a number of wood-working factories which were using it until they were stopped by threats of suit for infringement by an applicant for a private patent covering the same formula discovered by the government chemists. Upon consideration of the evidence as to priority, however, the U. S. Patent Office granted the patent to the Forest Products Laboratory for dedication to the people of the United States for their free use.