SCIENCE NEWS

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PUBLIC AND PRIVATE MEDICINE

AT a dinner in New York, of the Board of Counsel of the Milbank Memorial Fund, practical steps for a solution of the great controversy of public health *vs.* private practice were presented by Dr. James Alexander Miller.

Dr. Miller advised his fellow physicians to acquire a broader outlook on public problems and to consider the matter of the public health as well as the curing of individual patients. At the same time, health departments and other health organizations were advised to enlist the aid of private physicians in putting over their health programs, rather than to spend public funds for work that rightfully should be done for the people of his community by the private physician.

The sympathetic individual touch that exists between doctor and patient is important and should be saved. Clinics and dispensaries, insurance companies and health departments can not give this, although they can do much good work. However, from the ranks of practicing physicians are arising men who have not lost touch with individual, curative medicine, but who have also interested themselves in preventive medicine. Such men, leaders in their profession, will become connecting links between the medical profession and the public and private health organizations.

"The growing knowledge of causation of diseases has forced preventive medicine into the foreground," said Dr. Theobald Smith. Research has become the fountain head of advances in both curative and preventive medicine, he pointed out in a discussion of how research has brought the practice of medicine and public-health activities into closer relationship. While the conflict between the two wings of medicine is natural, both wings are really needed by the public. The physician is the outpost for the public-health officer, discovering new diseases, their causes and new means of treating and preventing them. Health demonstration programs may be considered as a kind of research experiment in proving how good our knowledge of disease prevention is.

The demonstration program sponsored by the Milbank Fund has given the world knowledge of the machinery needed to suppress certain diseases in a community, according to Dr. William Charles White, of the National Research Council. He added that the latest feature had been the development of a means of evaluating the methods used in health demonstration work, so that they may be arranged according to their relative importance. This has been done through statistical studies carried out by Edgar Sydenstricker, formerly statistician of the U. S. Public Health Service.

Dr. Linsley Williams was of the opinion that a mere desire on the part of the county medical society to develop or guide the public-health activities of the county is not enough to accomplish anything. An effective course, as developed in New York, is to have one member of the society devote a large share of his time to ascertaining the facts in regard to the particular activity the society wants carried out. The individual can then advise the local health department with a good chance of achieving results. Frequent meetings between the State Medical Society, State Health Department and state lay organizations have also been valuable in New York.

THE ORIGIN OF MAN

MAN may have evolved from his more humble beginnings on the partly wooded prairies or forest edges of upland plateaus, where he had to use his wits and speed to pursue the agile game that lives in such regions and where he had a stock of good flints to use when the tool-making stage of his development arrived. The probabilities in favor of this theory, as against the more widely accepted notion of a birth of the race in the warm jungles to the south, are outlined by Dr. Henry Fairfield Osborn, director of the American Museum of Natural History, in the first issue of the new scientific journal, *Human Biology*.

The ape-man of Java, *Pithecanthropus erectus*, is not an ancestor of man at all, Dr. Osborn thinks. He represents rather a somewhat remote cousin, who, because he wandered off into the warm tropics where living was easy and where there was little opportunity or incentive for tool-making, became unprogressive and remained physically and mentally primitive for ages, while his harder-pressed kinsmen to the north and west responded to their less favorable environment by conquering it and becoming real men in the process.

On anatomical as well as geographical grounds, Dr. Osborn rejects the whole Darwinian idea of a recent close connection between humankind and the great apes. He believes that the tailless apes, considered to be man's closest relatives among the animals, are too different in many respects and too highly specialized in these differences to be looked upon as "contemporary ancestors." The hands and arms of the apes are developed with special reference for tree-climbing, and are in this respect much more highly evolved than the relatively unspecialized hands and arms of man.

But the hand of man, with its exceedingly flexible fingers and opposable thumb, is an instrument of manipulation such as no ape or other animal possesses. Together with the highly organized brain with which it grew up the human hand represents a long evolution separate from any ape. To reach its present state it must have been freed from the burden of tree-climbing and from any other assistance in locomotion for many millennia; and this, Dr. Osborn argues, could have occurred only in a ground-dwelling prehuman or early human stage, ranging in a partly open region.

Such a region, he thinks, was offered by the plains of Mongolia three or four geological periods ago, and his opinion has been strengthened by a journey into this region, which has been brought to the attention of the

scientific world by the various Asiatic expeditions under Roy Chapman Andrews. As an alternative possibility, however, he also suggests the highlands of Africa.

THE LARGEST METEORS

A SEVENTY-TON meteor is reported to have been found at Otjihaene, near the head of the Grootfontein railway in the northeastern part of Southwest Africa, imbedded in soft limestone. Its approximate size is ten by ten by four feet. Though this is said to be the largest meteor ever actually discovered in the world, it is probably dwarfed by the one which many years ago caused the famous Meteor Crater in Arizona. This is the opinion of Dr. George P. Merrill, of the U. S. National Museum. The great meteor which fell in the Yenissei Province of Siberia on June 30, 1908, was also probably much larger, but as yet the main part of neither of these meteors has been located. Another huge crater, caused by a meteor that fell at some time in the past, was discovered in the Pamir, in Central Asia, near Afghanistan. This latter crater is a conical pit 260 feet in diameter and 33 feet deep.

The 1908 Siberian meteor is probably the largest that has ever struck the earth. The region of the fall is marshy and more than a mile in diameter. The ground is pitted with deep funnels from 50 to 100 feet in diameter, so that probably the meteorite, with a weight estimated at half a million tons, burst to pieces, bombarding the earth with fragments. At the towns of Kerensk and Ilimsk, 250 miles away, great detonations were heard and pillars of smoke and fire were seen. Railroad officials at Kansk, 400 miles distant, felt the air wave and heard a roaring sound, while the seismographs at Irkutsk, 900 miles away, detected the vibration of the earth when it hit.

Though no human beings happened to be in its path, one herd of 1,500 reindeer belonging to a farmer was annihilated. Only a few scorched carcasses remained. Houses were badly damaged and metal utensils were melted. Trees on surrounding hills were scorched and knocked over; they can still be seen with their tops pointing away from the center. An expedition sent out by the Soviet Government studied the general character of the region. Later borings will be made for pieces of the actual meteorite. This is the first authenticated time that a meteorite did damage to man or animals. It is fortunate that it fell in such a sparsely settled region and not in a large city like New York or London.

SYNTHETIC FOOD FOR PLANTS

FEEDING plants on a synthetic chemical diet will be achieved long before human beings are in a position to subsist on concentrated synthetic foods, Dr. W. S. Landis, vice-president of the American Cyanamid Company, indicated in a communication to the American Institute, New York, N. Y.

In fact, the day of pure chemicals as plant nutrients has already arrived through the use of concentrated chemical fertilizers. Synthetic nitrogen chemicals, such as cyanamid, urea and nitrate of lime, are blended with other chemicals, such as ammonium phosphate, potassium phosphate, potassium nitrate and other like combinations that place in the fertilizer nitrogen, phosphate or potash in a form that plants can assimilate. Plants can not live on these chemicals alone, as small quantities of manganese, zinc, vanadium, titanium and many other elements are needed, besides carbon dioxide and water, from which the bulk of plant foods are manufactured by the plants themselves.

The future fertilizers will be much more concentrated in the three common plant foods than even past history would lead one to suppose. The older organics of animal or vegetable origin will disappear to still greater extent and will be replaced by newer synthetic salts, mostly of inorganic nature. Process limitations existent to-day will disappear in so far as they eliminate essential plant foods, and the science of compounding will be greatly elaborated as we acquire better knowledge of plant requirements and soil deficiencies.

WHOOPING-COUGH

WHOOPING-COUGH still ranks as a deadly disease, in spite of efforts to check it. The general belief that it is merely an annoying but necessary evil of childhood is all wrong. Scientists and public-health officials are warning mothers not to take it lightly and to be ready to guard their children against the usual spring and summer outbreaks.

"No other common infectious disease of childhood takes so large a toll of life among children under two years of age," said Dr. Matthias Nicoll, Jr., New York State commissioner of health. Whooping-cough is not only dangerous in itself, but it is also frequently followed by pneumonia and tuberculosis.

Various vaccines and sera for preventing the disease have been developed. None of them has been entirely satisfactory, although some physicians have reported success. One of these which does not entirely prevent the disease does reduce its severity and the fatalities resulting from it, and is recommended by health officials.

The best prevention still consists in keeping children away from those who have whooping-cough. This is difficult because the characteristic whoop does not develop until a week or more after the onset of the disease. Consequently, to be safe, one must keep the children away from those who have colds or coughs.

Reduction of whooping-cough has lagged far behind reduction of other communicable diseases chiefly because of the popular attitude that it is not a serious disease. Deaths occur just as often as they did twenty-five or thirty years ago.

The cause of whooping-cough is generally accepted as being the Bordet-Gengou bacillus, named for the two Frenchmen who isolated it in 1906. It has been the basis of most of the attempts to produce an antitoxin or preventive vaccine.

Ultra-violet and X-rays, alkalis, blood serum and even ether have been used more or less successfully in the effort to find a cure or preventive of the disease.

MICE AS DISEASE CARRIERS

CARRIERS of dangerous typhoid-like germs that scurry through the darkness of the night, unchecked by the careful health regulations that surround the human carriers, are suggested by the researches of Dr. Sara E. Branham, of the U. S. Hygienic Laboratory of the Public Health Service in Washington.

Many human diseases have close counterparts among animals. Among such diseases are those of the intestinal group related to typhoid fever. Scientists have now found that there may be animal as well as human carriers of these diseases, which may account for some otherwise unexplained outbreaks. (A carrier has recovered from the disease but still harbors in its system the germs, ready to spread infection among others.) White mice particularly were found by Dr. Branham to be carriers of a group of intestinal diseases.

The white mice were inoculated with strains of the organisms that cause various intestinal diseases and so-called food poisonings. Those that recovered harbored the germs in their intestinal tract and gallbladder, just as do human carriers. Guinea-pigs and wild gray rats were also given the inoculation, but among their survivors no carriers were found. This does not mean that carriers may not exist among these rodents also, Dr. Branham pointed out, as the number of animals in the investigation was too small to give conclusive results.

Animal disease carriers may account for outbreaks in human beings which can not otherwise be explained. Dr. Branham pointed out that food may become contaminated from infected rodents.

CANARY BIRDS AND MALARIA

CANARY birds can serve mankind in another way than with their singing. For ten years they have been subjects of experiment by scientists at the Johns Hopkins School of Hygiene and Public Health. Birds as well as men are subject to malaria, so that it has been possible to discover many important facts about the disease by studying it in birds. The results of the ten-year study carried on by Dr. Robert Hegner and his associates at the Johns Hopkins University will be reported in the forthcoming issue of *The Quarterly Review of Biology*.

From these studies it was found that the parasites causing malaria exist almost entirely in the red cells of the blood. The exact number of parasites in a given quantity of blood at various stages of the disease was determined. It was found that feeding sugar to the birds favors the development and growth of the parasites, while injecting insulin and thus decreasing the amount of sugar in the blood was unfavorable.

The exact relation between the stage of development of the parasites and the stage of the illness was determined. Various factors in the sick individual affecting the development and growth of the parasites and individual resistance to the disease were studied. From discoveries of this sort it is hoped to gain further control over the disease in both birds and human beings.

ITEMS

DR. CHARLES DRECHSLER, associate pathologist of the United States Department of Agriculture, has discovered a fungus associated with a root rot of corn which possesses 25 to 30 male elements for each female element involved in the reproductive processes. The disease which is produced by this extraordinary fungus is not serious.

TULAREMIA is probably wide-spread in Russia, public health officials now believe. This disease, commonly known as rabbit fever, is doubtless prevalent among both animals and human beings. A Russian scientific journal has reported that the disease exists in several Russian communities, among them the province of Astrakhan. This report in addition to the recent discovery by the U. S. Hygienic Laboratory of the germs of tularemia in specimens sent from Russia and the mention by Leon Trotsky of a rabbit scourge in the country have convinced health officials in Washington that the disease may now be pandemic in Russia.

THE cod livers that contain the most oil do not have the best, from the standpoint of preventing rickets, Dr. Alfred F. Hess, Dr. Charles E. Bills and Edna M. Honeywell have found by recent experiments. The antirachitic potency of cod-liver oils is determined by a feeding experiment on young rats. In this way cod-liver oil for the market is assayed. Using the same method, these investigators found that oil from "poor" livers was 200 times more potent than high-grade oil. "Contrary to current opinion, antirachitic potency varies inversely with the amount of oil in the liver," the investigators reported to the *Journal* of the American Medical Association. They found that rich livers had oil which was very much less effective in checking rickets. The more potent oil found in poor livers has a very dark color and can only be obtained in minute amounts. Oils from individual fish may vary as much as 1,000 times in their antirachitic value, it was found.

A NEW product that has cod-liver oil's ability to build bones and prevent rickets, but that is without the offensive taste of the fish oil, is now being manufactured by an American firm under the Steenbock patents of irradiated foods. This product is based on the newly discovered fact that a chemical substance, ergosterol, found in the fish oil, is the substance that has the antirachitic power. Ergosterol is also found in an inactive state in yeast and in certain fungi. It has been isolated from ergot oil, found in the fungus on rye which furnishes medicine with another widely used substance, ergot. Exposure to ultraviolet rays, either from the sun or from artificial sources, gives yeast ergosterol the antirachitic properties. This activated yeast ergosterol has been dissolved in peanut and cottonseed oils, and is being manufactured and will be sold as a cod-liver oil substitute. The process was worked out by Dr. Charles E. Bills. The new product has the further advantage that it will not spoil and grow rancid as cod-liver oil at times does.