SCIENCE NEWS

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PUBLIC HEALTH

OPTIMISM was the keynote of the gathering of doctors and health experts at the American Public Health Association meeting at Washington last week. The health of the country has never been better.

Membership in the organization is at its peak. The number of life members has doubled, in spite of the economic depression. Enrolment in the health education institute showed more than double the expected number. Some students came all the way from Texas especially to attend this new feature of the annual meeting.

Visions of the future in which clean, healthy air will be an accomplished fact in cities, as pure water and clean milk are now, were held out.

"Sickness and death rates are either the lowest in the history of the country or very close to it," declared Dr. Louis I. Dublin, of New York City, in his address as president of the association at its first general session. "There is no evidence as yet that the depression has adversely affected the physical resistance of the people. Infant mortality, deaths from the communicable diseases of children, tuberculosis and pneumonia, all of which we have in the past, either rightfully or wrongfully, associated with the level of the standard of living, have continued to decline this year."

However, Dr. Dublin pointed out that there are no records that show the effect of the depression on the mental health of the people, and he expressed the fear that this must be "anything but good." He decried the fact that health departments all over the country had suffered budget cuts. "No community even at present is so poor that it can not afford to safeguard the life of its citizens," he said. "I hate to think what it would mean in cold dollars and cents if we were suddenly confronted with epidemics of typhoid fever, of smallpox or of diphtheria." From two to three dollars *per capita* would give most places excellent public health service. Clean air with its full value of health-giving ultra-violet light must be furnished to all the people just as clean milk and water are now available, is the opinion of Dr. Fred O. Tonney, of the Chicago Health Department. Air pollution is not alone a matter of economic and esthetic concern. It is an acute health problem. Smoke and soot in the air screen out the ultra-violet rays which prevent rickets and are also necessary for the health of expectant mothers and their unborn babies. He suggested that supplying clean air might become a function of governments. Underground conduits, like aqueducts and sewers, may be used as outlets for objectionable fumes from combustions and industrial processes in the cities of the future. Natural gas might solve the problem, as the combustion products of gas heating do not shut out the sunshine. Or hydroelectric power might be used to furnish clean heat. A practical step toward cleaner air for cities has been taken in Kansas City, where central steam heating plants burning coal and oil are replacing small units in congested areas. This has already had a noticeable effect on air conditions.

The health forces of the nation are engaged in mopping up operations against the guerrillas of the disease battle. These stragglers of the anti-health forces are the carriers of typhoid, diphtheria and other infectious diseases, who innocently spread ills among the population while not being sick themselves.

A special session of the association was devoted to consideration of these carriers. This indicates, in the opinion of Dr. Haven Emerson, of Columbia University, who presided at the special session, that public health technic has reached a high level of refinement. There are two distinct levels in the management of disease control. On the first level come mass operations, such as water purification and milk pasteurization. Then when the amount of infectious disease level has been reduced markedly by these means, the main spreaders of disease are found in the carriers. When man begins to take an intelligent interest in the carriers, it means he is closing in on the diseases in his struggle to conquer them.

Studies showing that healthy carriers of whooping cough exist were reported by Dr. Travis P. Burroughs and Dr. Edmund Kline, of the Cattaraugus County, New York, Health Department. These carriers, however, are probably of little importance in the spread of the disease. Healthy carriers of infantile paralysis may be as important in the spread of this disease as diphtheria carriers are in the spread of diphtheria, Dr. Lloyd Aycock, of Harvard University School of Public Health, observed. Methods of detecting carriers of tuberculosis, typhoid fever and other diseases were discussed at the meeting.

Noise has been shown to have a harmful effect on the recuperative value of sleep. Conversely, it increases mental effort and so depletes the vitality so necessary in modern life. The importance of recognizing the effect of noise on the health of people was emphasized by C. R. Cox, sanitarian of the New York State Health Department, who is chairman of the committee on noise which presented a progress report to the meeting. Studies of the committee both in America and abroad showed that the most satisfactory results may be secured through the creation of noise abatement commissions. These must be supplied with sufficient funds to employ an administrative staff.

The best nourished children in all Europe are to be found in Russia, in the opinion of a group of physicians who have visited the various countries, studying health conditions. Dr. John Sundwall, professor of public health and hygiene at the University of Michigan, attributes the splendid health condition which he observed in Russian children to health-promoting activities of the government. He stated that he knew of no country in which the government has more interest in watching the health of the individual right through his life. More important than the economic and industrial undertakings of the five-year plan is what Dr. Sundwall termed the

"spiritual side" of the plan. This takes in such factors as health, education, hospitals, medical service and sickness insurance. In the cities, such as Karkov, Leningrad and Moscow, each industry has its health centers, while the public schools have their own medical service. The future belongs to the country that produces the greatest number of children and sees that they grow up normal and free from physical defects. Russia is putting that maxim into practice, and Dr. Sundwall foresees a great future for the country. Even the overcrowding, which exists in the cities at present, shows growth and as such is an indication of the health of the country.

The strain of typhoid fever germs from which most anti-typhoid vaccines are now made may no longer be efficient in giving protection against the disease. Studies showing this were reported by Dr. Francis B. Grinnell, of Harvard University. The vaccines like those which were used so successfully to protect American soldiers during the war, are made from what is known as the Rawlins strain of typhoid germs. The original germs of this strain, the ancestors of the ones that make the typhoid vaccines, were isolated from a soldier who died in the South African war. Bacteriologists have found recently that germs are not very stable. They may change their form and characteristics as they grow older, and with these changes there is sometimes a change in virulence. The Rawlins strain of typhoid germs has shown some of these changes, and investigations with mice showed that the Rawlins strain was much inferior as a protective agent to some of the other strains with which they are compared. Dr. Grinnell urged substitution of the newer, more virulent strains in the preparation of anti-typhoid vaccines.

Strange changes in hemolytic streptococci, from cases of erysipelas and scarlet fever, were described by Dr. Sophie Spicer, of the New York City Health Department. Dr. Spicer is now trying to produce toxins from the original and from the new strains of streptococci, and is making other studies, to see what difference these changes make in the effect of the germs on the body, both as regards producing disease and giving protection against it.

THE NOVEMBER METEORS

NINE groups of observing parties, including astronomers at five observatories, will join in watching for shooting stars on three nights in the middle of November.

Scattered at points from Philadelphia to Virginia, these observers have been organized by Dr. Charles P. Olivier, director of the Flower Observatory of the University of Pennsylvania, and president of the American Meteor Society. The Naval Observatory and the Georgetown University Observatory at Washington; the Hood College Observatory, at Frederick, Maryland; the observatory of the Maryland Academy of Sciences at Baltimore, as well as the Flower Observatory, are in the "hook-up."

In this way, it is hoped to get an accurate record of the numbers of meteors that appear in the Leonid shower of shooting stars. Every year some of these meteors appear, but astronomers think it likely that this year may see a display that has not been equaled since 1866. The night of November 15 and early morning of November 16, it is supposed, will bring the greatest numbers, but the observers will be on the watch during the preceding and following nights as well.

Dr. Olivier warns the public against expecting the meteor shower with as much confidence as the coming of an eclipse. Meteors are much more uncertain than eclipses. Though there were fine displays at approximately 33-year intervals, in 1799, 1833 and 1866, another was expected for 1899, but failed to appear. The reason was that the swarm of meteors which might have encountered the earth at that time had passed close to the planet Jupiter, and had been pulled aside by Jupiter sufficiently to miss our planet.

Mathematical studies made recently by members of the computing section of the British Astronomical Association, however, indicate that the swarm has been switched back. Tempel's comet, last seen at the time of the 1866 shower, is due for a close approach to the earth this year, and its orbit coincides closely with that of the meteors. Probably, suggests Dr. Olivier, the meteors and the comet are "brother and sister," both parts of a still larger affair that broke up ages ago.

In November, 1833, the whole sky was covered with meteors, hundreds being visible at once. All seemed to emerge from a point in the constellation of Leo, the lion, from whence comes their name, "Leonids." Actually, however, the meteors are moving in parallel paths. When they encounter the atmosphere of the earth, the friction ignites them, and they disappear in a blaze of light which is seen as a shooting star. Being parallel, the paths seem to join at a point in the direction from which they come, just as the rails of a track seem to join in the distance.

In November, 1930, a much better shower was seen than for many years, and last year it was still better. This would indicate, it is supposed, that the earth was then entering the outer part of the main meteor swarm. These meteors move around the sun in a gigantic elliptical orbit 1,900,000,000 miles long and take a little over 33 years to make a circuit. There are a few scattered meteors all around the ellipse, but the main swarm is concentrated like the gem in a ring. It is an encounter with this "gem" that causes a great shower.

NEW MATERIALS IN STEEL MAKING

CHEAPER substitutes for ferromanganese, necessary for removing oxygen in the final step in making steels, have been developed through several years of cooperative research at the Carnegie Institute of Technology at Pittsburgh.

In case of war the steel industry could run on a fifth to a third of its present imported ferromanganese which must now be added at the rate of about fourteen pounds to every ton of steel produced. This important step toward America's military self-sufficiency is a by-product of the research conducted by Dr. C. H. Herty,

Jr., and recently reported to the Carnegie Institute's Metallurgical Advisory Board.

An alloy of iron with manganese, known as ferromanganese, is conventionally used to deoxidize the steel. The manganese is fond of oxygen, takes it away from the iron and abducts it into the slag. Dr. Herty first made a twin combination of manganese and silicon that did the work of ferromanganese cheaper and better. For over a year these manganese-silicon alloys have been tested commercially with success in open-hearth steel making at a few large steel plants.

Now Dr. Herty is ready to present to the steel industry a triplet deoxidizer, an alloy of manganese, silicon and aluminum. Aluminum has an even greater avidity for oxygen than silicon or manganese. This triplet deoxidizing alloy can be made from American iron ore that runs from 5 to 35 per cent. manganese, sand that contains silicon and bauxite which is the ore of aluminum. All these are American products, the supply of which would not be interrupted by a war. The new manganese-silicon-aluminum alloy will be given its first commercial test within a month. So far its use has been limited to test runs in the laboratory.

In making steel from pig iron, oxygen is first introduced into the molten mass to remove impurities that will combine with oxygen and pass off in the slag. Then the oxygen must itself be removed and that is the function of ferromanganese and Dr. Herty's new twin and triplet deoxidizers.

The largest American supplies of manganese-carrying iron ores are in the Cuyuna range of Minnesota. If the highest manganese contents of these ores are held as war reserves and not wasted in making ordinary pig iron, Dr. Herty explained, they will be a valuable mineral resource for the future.

ITEMS

SINANTHROPUS, the prehistoric man of Peking, may have existed on earth at a later date than either Pithecanthropus, the Java Ape Man, or Eoanthropus, the Dawn Man of Britain, yet he was more nearly an ancestor of our own than were either of these, his elders. So declares Professor G. Elliot Smith, noted British anatomist, in the annual report of the Smithsonian Institution. "His characters are more generalized, some of them distinctly reminiscent of man's simian ancestry and others strangely foreshadowing the qualities hitherto regarded as distinctive of *Homo sapiens*. In other words, Sinanthropus enables us to picture the qualities of the original members of the human family by revealing a type which, though human, was curiously ape-like, and obviously close to the main line of descent of modern man."

THE ranks of evolutionary "missing links" have lost another member. This time it is a fly, a curious insect from the high-lying lake region of southwestern Argentina, that fills a gap between the bot-flies that bother cattle and a group of tiny flies that parasitize other insects. The common house-fly is only a distant relative. The find was made by Raymond C. Shannon, a Smithsonian entomologist, but its significance was not realized until the specimen reached the U. S. National Museum. Here it was examined by Charles H. T. Townsend and Dr. J. M. Aldrich, curator of insects. The new fly is like a bot-fly, except that it has bristles on its body, while the bot-fly is smooth. It represents, possibly, a "surviving ancestor."

A NEW river, the Rio Brown, will appear on the future maps of South America, as a result of explorations by the Ulrich Expedition. Otto W. Ulrich, leader of the expedition, named it in honor of Dr. William Moseley Brown, of Ballston, Virginia, who, with several other sponsors, has made the expedition possible. The Rio Brown rises in the deep interior of Brazil, and flows westward into the Araguaya, which eventually reaches the sea through the great estuary of the Para river. In its upper course, the newly discovered river approaches the headwaters of the Rio Xingu, where the lost explorer Fawcett was last heard of.

MOSQUITOES, which play an important rôle in the transmission of malaria and yellow fever, may also carry tularemia or rabbit fever, Cornelius B. Philip, Gordon E. Davis and R. R. Parker, of the U. S. Public Health Service, have found in studies made at the Rocky Mountain spotted fever laboratory. The part played by the mosquito in carrying tularemia is purely mechanical. If a mosquito is interrupted while feeding on an infected animal, and bites soon after, he can pass the infection along to his next victim. The disease may also be acquired when infected mosquitoes are crushed on the skin, with or without subsequent rubbing, and when mosquito excrement is deposited on the skin.

EXAMPLES of what might be called "prophetic evolution," wherein certain gland secretions are present in animals that have no known use for them, are pointed out in *Nature*, by Dr. David Landsborough Thomson, of McGill University. Dr. Thomson calls attention to the fact that adrenalin is present in members of the earthworm family, though if it has a function in these animals that function has never been discovered. Another case in point is the gland secretion that causes the production of milk in mammals and "pigeon milk" in the crops of pigeons—different substances, produced by different organs, yet provoked by the same stimulant. He cites several other examples.

POSSIBLY the original ancestor of all the later saber-tooth tigers, certainly the earliest cat so far found, is the distinction claimed by one of the fossil skulls brought back to Princeton University from the Big Badlands of South Dakota by Professor Glenn L. Jepsen, leader of the Scott Fund Expedition. The fossil was included among hundreds of others dug up in the Big Badlands during the past summer. It was recognized then as a saber-tooth tiger, but its unique position in the feline family tree was not then determined. Now it has been found to be a new genus, ancestral to two separate lines of saber-tooth tigers from which no connecting link has hitherto been known.