SCIENCE NEWS

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SOME PAPERS READ AT THE NEW YORK MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

THE human slayer is the new enemy that health authorities were urged to battle in their peace-time fight against preventable death when Dr. R. N. Whitfield, of the Mississippi State Board of Health, addressed the meeting of the American Public Health Association which opened in New York on October 5. Homicide in 1935 took more lives than the germs of typhoid fever, paratyphoid fever, typhus fever, undulant fever, smallpox, scarlet fever and diphtheria combined. An amendment to the Constitution, dispensing with the jury system, is the vaccine Dr. Whitfield suggests for the conquest of this peace-time foe of mankind. If instead of juries, three to five "learned and upright" judges were to hear every case in law, Dr. Whitfield believes half the crime in the United States would be ended within two years. He not only prescribes a remedy for fighting this kind of preventable death—better and swifter law enforcement—but he also lists the causes, because prevention of crime, like prevention of disease, depends on knowing the cause. Heredity, environment and illiteracy are predisposing causes of homicide and other forms of criminality, as they are of many illnesses. For the active causes of homicide the specific "germs" are robbery, revenge, jealousy, gambling, drunkenness and immorality. But most prevalent of all causes for homicide, in Dr. Whitfield's opinion, especially in the United States, is lack of law enforcement.

DETAILS of a new experiment in keeping children healthy in mind as well as in body were reported by Dr. Julius Levy, director of the bureau of maternal and child health of the New Jersey State Department of Health, at the meeting of the association. The idea is to give mothers of infants and small children a preparedness program for mental health. Doctors don't wait till a child has rickets to tell its mother to give it cod-liver oil; they tell the mother soon after the child is born that children who do not get enough vitamin D are sure to have rickets and that the way to avoid rickets is to start giving cod-liver oil or some vitamin D preparation from the start. Physicians and psychiatrists know enough about the causes of mental disorders, Dr. Levy explained, to start similar preventive methods. The nurses do not attempt to give psychiatric treatment. They are taught what to tell the mother of normal children about how the mother's attitude affects the child and what the mother can do to keep her child's mind healthy.

THE eradication of scarlet fever seems near at hand, according to reports of the experiences of Milwaukee with two measures for bringing the disease under control. The reports were given by Dr. Edward R. Krumbiegel, of the Milwaukee Health Department, and Dr. Maurice Hardgrove, of the Milwaukee Convalescent Serum Center. The way to control the disease would be to give Dick tests to all small children to determine which ones are susceptible to scarlet fever. The susceptible ones would then be given protection against it by four or five doses of immunizing toxin. In addition to this, Dr. Hardgrove suggests that any one who has been exposed to scarlet fever by coming in contact with a patient or a carrier of the germs should be immediately given a dose of convalescent serum, and then removed from the source of exposure while receiving the immunization treatment. The efficiency of scarlet fever immunization in giving protection against the disease showed up in figures for the last three years reported by Dr. Krumbiegel. During that period, one incidentally in which Milwaukee has had two scarlet fever epidemics, the department of health adopted the procedure of Dick testing all those over eighteen months of age and subsequently immunizing those found by the test to be susceptible to the disease.

A NEW disease, which may have affected as many as one out of every five adults in the country without their knowing what they had, came in for discussion at the New York meeting. The disease has the name lymphocytic choriomeningitis and is caused by a virus. In about half the cases it causes fever and symptoms similar to influenza. In the other half it affects the membranes that cover the brain and causes more severe symptoms, such as bad headaches, stiff neck, nausea and vomiting and even slight, temporary paralysis. So far, no death has been reported in a proved case of this disease. It is difficult or impossible to distinguish this new disease by clinical means alone from another brain membrane inflammation, acute aseptic meningitis, according to Drs. R. D. Baird and Thomas M. Rivers, of the Hospital of the Rockefeller Institute for Medical Research. The disease was discovered and its virus isolated by Drs. Charles Armstrong and R. D. Lillie, of the U. S. National Institute of Health. They found the virus while studying viruses from St. Louis encephalitis epidemic patients in 1934. Two years before this Commander Paul F. Dickens, of the U. S. Navy Medical Corps, had reported two cases of what looked like acute aseptic meningitis, but which he thought might be another disease caused by a virus. Since then the virus has been recovered from patients and from monkeys, mice and other animals in this country, England and France.

THE number of cancer deaths reported annually in this country is about 6 per cent. less than the actual number, Eleanor J. Macdonald, statistician of the Massachsetts Department of Public Health, concludes from a survey of cancer mortality figures backed by personal interviews with the families and attending physicians of the deceased and study of the hospital records. For every hundred cancer cases reported, 11 have been missed and 5 have been erroneously diagnosed as cancer, Miss Macdonald found. This gives the extra six per cent. which means that, to get a true picture of the extent of cancer mortality, six must be added to every hundred cancer deaths reported.—JANE STAFFORD.

MAN-MADE MOLECULES

MAN has only begun to fashion the molecules into the kinds of things he wants, and chemistry and its useful applications to man stretch into a future almost unbounded. This was the forecast made by the engineer and chemist, Thomas Midgley, Jr., who delivered the first of three Charles Frederick Chandler Memorial lectures arranged by Columbia University.

Mr. Midgley is a director of the American Chemical Society and vice-president of the Ethyl Gasoline Corporation. He discovered the use of tetraethyl lead for antiknock fuels and also organic fluoride liquids used for safe refrigeration.

Man-made molecules, tailored for a specific job, far transcend in possibilities the wildest dreams of the alchemists. Already over 100,000 employees work in industries which depend on the man-made molecules, he said, listing some 58 important molecules which include 25 organic, ten inorganic, ten medicinal and eight molecules from the "pre-chemistry era."

The first synthetic molecule of the modern era of chemistry was vulcanized rubber in 1839, according to Mr. Midgley. Here is his listing of more than fifty important ones since that time:

Organic—coal tar dyes, 1856; nitroglycerine, 1866; nitro cellulose plastic, or celluloid, 1874; nitro cellulose explosive, or smokeless powder, 1898; phenolic resins and rubber accelerators, 1912; tetraethyl lead, 1923; nitro cellulose lacquers, 1924; rubber antioxidants and cellulose acetate textiles, 1925; cellulose acetate or cellophane, 1926; alkyd resins, 1927; organic mercury fungicide and ethylene glycol antifreeze, 1928; urea resins, 1929; gasoline anti-oxydants for preservatives and organic polysulfides for rubber substitutes, 1930; chloroprene polymer for rubber substitute, cellulose acetate plastics, and organic fluorides for refrigerants, 1931; vinyl polymers for molding material, 1932; sulfonated alcohols for detergents, 1933; methyl methacrylate for optical glass substitute, 1936; copper phthalocyanine pigments, 1937.

Inorganic—silver bromide, 1864; aluminum, 1888; silicon carbide, 1898; lead arsenate, 1900; chlorine for water sterilization, 1905; ductile tungsten, 1912; boro silicates or pyrex, 1914; magnesium, 1918; sodium chlorate for weed eradicator, 1927; tungsten carbide, 1928.

Medicinal—ethyl ether anesthetic, 1846; chloroform, 1847; iodoform, 1880; acetyl salicylic acid, or aspirin, 1900; barbitols, 1904; arsphenamine, or salvarsan, 1910; novocaine, 1916; hexylresorcinol antiseptic, 1927; divinyl oxide anesthetic, 1932; p-aminophynylsulfamid, specific against cocci, 1936.

CUBAN LAND SHELLS IN FLORIDA

HURRICANES, roaring up out of the Caribbean to lash the coasts of Cuba and then turn and spend their force on the Florida Keys, are responsible for certain striking peculiarities in the distribution of animal life of the two regions.

Such is the belief advanced by Dr. Carlos de la Torre, Cuban naturalist and formerly president of the University of Havana, who is now in Washington carrying on research in the land-shell collections of the U. S. National Museum. Dr. de la Torre's special study for more than sixty years has been on Cuban land shells, among them the exquisitely colored genus *Liguus*. These are the houses of tree-dwelling snails found in infinite variety in Cuba, Haiti and southern Florida.

On the island of Cuba he has found certain varieties of these shells inhabiting definite, limited areas—and on the Florida Keys and the tree-covered "islands" of the Everglades, he has found the same unmistakable varieties repeated.

This poses a rather tough biological riddle. There is the distance of hundreds of miles as well as the wide salt-water barrier of the Florida Strait, which the land-snails could never swim. And finally, why the total lack of representatives of any given variety, between the Cuban habitat and Florida?

Only with the aid of mighty winds could these snails have made the long leap from island to peninsula, thinks Dr. de la Torre. Young snails secrete a cement with which they fasten themselves firmly to leaves. Such snail-bearing leaves, wrenched from the trees in a hurricane, can be carried scores of miles. Those that fall into the sea are lost, but those that fall into congenial environment on the shore can proceed to establish colonies of their species.

To clinch his argument, Dr. de la Torre has taken a map of the region around Cuba and lower Florida, and set down shells from each of the twin Cuba-Florida colonies in their appropriate locations. On the same map were traced the paths of historic hurricanes. In was found that in practically every case the separated shell colonies in Cuba and Florida were on one or another of these hurricane highways. If not absolute proof, it is at least exceedingly striking evidence for the validity of his hypothesis.

Dr. de la Torre has had one of the longest careers as an active scientist that can be claimed by any man now living. Son of a college president, he did his first college teaching at sixteen, and he is now in his eightieth year. He has been honored by many leading scientific organization in the United States and Europe. Yet he has twice suffered exile from his native land because of his activities as a patriot. Each time, however, changing conditions have permitted him to return to his home with honor.

Dr. de la Torre is at present working with Dr. Paul Bartsch, of the U. S. National Museum. They expect to publish a number of scientific papers together.—FRANK THONE.

DUST BOWLS OF THE PAST

INDIANS who lived in prehistoric America may reveal undependable areas for farming—regions that turned into dust bowls in the past and may be expected to do so again. This is the hope of archeologists who are beginning to explore the land in the Great Plains states.

Just returned from Kansas, Dr. Waldo R. Wedel, of the Smithsonian Institution, reported that he has unearthed village sites of varying ages. Accumulating evidence from such excavations shows that group after group

of prehistoric Indians settled in sections of Kansas and Nebraska. Both hunters and farmers came. The farmers apparently would do very well while the weather was relatively wet, but after a few generations they would be driven out, perhaps by drought. The land would remain deserted for a long time. Then came a new group to repeat the experience.

The discovery by Dr. Wedel of pottery like that made by the Hopewell Mound Builders is a new indication that this kind of Indian culture spread west as far as Kansas City. These Mound Builders were concentrated in the Mississippi and Ohio River valleys. Now, it appears that they, or Indians influenced by their manner of living, were one group that tried to conquer an undependable area and were tricked by it. That Indian excavations can aid in showing where undependable areas for farming lie is, Dr. Wedel emphasizes, no more than a theory at present. But archeology does provide lessons from the past, and Plains prehistory may have this useful application.

CANADIAN FOREST FIRE FORECASTING

A SCIENTIFIC method of computing the daily index of fire hazard and forecasting the hazard for the next day is now in use by sixty forest stations in Quebec and New Brunswick. Known as the Wright system, the new method of forecasting forest fire hazards eliminates guesswork and individual judgment. The new system is based on daily records of rainfall, evaporation, wind and relative humidity.

In a country with forest and climatic conditions like Canada the problem of reducing losses from forest fires is ever present. Statistics collected by the Forest Service of the Department of Mines and Resources show that last year's forest fires cost over six million dollars in timber and property value alone. The cost of fire fighting came to more than $1,200,000. The loss in soil fertility, scenic value, floods, soil erosion, the lowering of water level in streams, all of which are inevitable results of forest fires, is incalculable.

Forest protection authorities have long recognized the need of a unit for measuring forest fire hazard, which varies with weather and forest types. There are many things which the forest ranger can plan better and more economically if he knows the degree of fire hazard which exists each day in his territory and can predict the probable conditions for the next day.

As a result of research work at the Forest Experiment Stations of the Canadian Forest Service, a method has been developed for computing an index of fire hazard from various daily records, which include rainfall, wind, humidity and evaporation. Data on each forest type and climatic conditions added to these records give the fire hazard for each day.

The method as used in Quebec and New Brunswick enables forestry officers to detail the work of rangers and other employees so that they will be available for fire duty if the fire hazard warrants. The index computed for each day makes it possible to determine the number of men to send to a fire; to regulate the issuance or cancellation of burning permits to settlers and others, so that the burning may be confined to safe periods; to regulate and control travel in and use of the forest by the public; to regulate the frequency of forest patrols and know when it is safe to allow forest lookout tower men to go off duty.

ITEMS

SLIGHT but definite variation in the color of the night sky from evening to evening has been reported by Jessie Rudnick, of the McDonald Observatory of the University of Texas. Camera plates, sensitive to different color bands or wave-lengths of light, were exposed to the north pole region of the sky on several different nights as a test for the suspected changes in the color-index. Interest is attached to the color check because of the pronounced effect slight changes in the sky's color may have on the measurement of faint stars and nebulae.

PROFESSOR HARLOW SHAPLEY, director of Harvard College Observatory, has announced that Harvard Observatory has succeeded in mapping 36,000 galaxies in the South Polar cap, where only a few had been previously charted. Over half a million galaxies, clusters of stars located millions of light years away, will be mapped by the time the observatory finishes work with its Bruce telescope and special long exposure camera. Eighty-seven photographic plates, each of a small sector of the sky, were made in order to cover the South Polar cap region, which constitutes about seven per cent. of the total region to be covered. Most troublesome regions to check were near the edges of the Milky Way, where stars in the galaxy in which the sun is a small star, interfered.

GREEN coloring matter has been obtained from hemoglobin, the red pigment of blood, by Drs. S. Edelbacher and A. von Segesser, of the University of Basel. The green color appeared when a mass of red blood cells was warmed in an acid solution. A small amount of copper salt hastened and intensified the reaction. One of the most puzzling facts in biology has been the fact that red hemoglobin of the blood is chemically much like green chlorophyll of plants. Whether the green blood-pigment derivative obtained by the Basel scientists is like chlorophyll in structure is not yet known.

THE "creeping death" epidemic which is reported to have taken nearly 300 lives and caused illness of about 6,000 persons in Fukuoka Province in southern Japan is none other than cholera, in the opinion of U. S. Public Health Service officials. The very name which has popularly been given the disease, "creeping death," is characteristic of cholera, it was pointed out. Reports of 32 cases of cholera in Japan were included in the last report received from the U. S. consular service by the Public Health Service. It would be very surprising, Dr. Williams pointed out, if cholera did not break out in Japan as a result of being carried back by troops who have been fighting in China, where there has been a severe cholera epidemic. The disease is spread chiefly through infected water and food. It can also be spread by direct contact, which may account for cases reported among policemen sent to aid health authorities in southern Japan but who were cautioned against drinking water from the local supplies.