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THE WAGNER HEALTH BILL

THE Wagner Bill for a national health program needs revision along the lines of improving existing government medical services to the needy rather than increasing facilities for medical care generally through state and federal financial aid. The type of revision seems indicated by the report on medical care presented by Dr. W. F. Braasch, of the Mayo Clinic, at the meeting of the American Medical Association at St. Louis.

Dr. Braasch's committee found, from replies to a questionnaire sent out by the American Medical Association, that very few persons in the United States are unable to receive medical care if they request it. The questionnaire and survey was not limited to physicians. Social workers, labor unions, industrial organizations, school authorities, relief agencies, hospital and dispensary authorities and public health officials were questioned as well as physicians and dentists.

The replies of these groups were almost completely unanimous. Their statistics and statements covered the medical care situation among 43,000,000 people. The number of Americans lacking medical care is nearer 40,000, these reports show, than the 40,000,000 which government surveys had indicated. The 40,000,000 figure is the basis for the national health conference program for distribution of medical care embodied in the Wagner Health Bill.

The various welfare, relief, health, labor and other groups also all agreed that government care for the medically needy wherever it is supplied is inadequate, except when supplemented by free services of physicians. It seems likely that this report will strengthen the opposition of the association to the Wagner Health Bill.

The survey showed that failure to secure medical care when it occurred was usually due to local conditions. The chief lack in medical care was seen to be in facilities for care of the chronic sick. Solution of the problem is offered by the prepayment plans for medical care now being instituted by many county and city medical societies throughout the country.

Only a few persons replying to the questionnaire, according to the report, recommended compulsory medical insurance, the majority agreeing that changes in local provisions for medical care would be adequate and that such changes should be instituted. Almost all opposed federally instituted changes. The committee report presented by Dr. Braasch has not yet been adopted by the medical association, but was referred to another committee for consideration.—JANE STAFFORD.

THE CAUSE AND CURE OF PHLEBITIS

THE cure of phlebitis in ten days by injections of novocaine anesthetic has been achieved by Drs. Alton Ochsner and Michael E. Debakey, of Tulane University School of Medicine, New Orleans. Discovery of the cause of the disease was also announced in their report to the American Medical Association. The condition, characterized by pain, swelling and fever, can occur not only in women after childbirth, but also in patients of either sex following operations. The patients usually are laid up with fever for from four to six weeks and have a swollen leg for the rest of their lives. It was found that the cause of the condition is a spasm of the blood vessels of the lower leg. This had been suggested as the cause of the condition by a scientist named Leriche. Drs. Ochsner and Debakey confirmed this theory by producing phlebitis in animals by constriction of the blood vessels, and by curing the condition in both animals and patients by an operation which relieves the constriction.

The operation consists in blocking the nerves that control constriction of these blood vessels by injections into the nerves of procaine hydrochloride, the local dental anesthetic, known also as novocaine. Pain is relieved immediately after the first injection: In the majority of cases, the fever goes down within forty-eight hours. The swelling is gone in from four to twelve days and most of the patients are out of the hospital and well within twelve days. Nine of the first group of fifteen patients were home in from four to eight days.

Any one who is operated on, Dr. Ochsner explained, gets a decrease in the pulsations of the blood vessels in the feet and lower legs. This means the vessels have a lowered ability to contract and enlarge their bore and as a result the flow of blood through the arteries and veins is decreased. When severe enough, this causes the condition of phlebitis.

The condition is less frequent in the South than in the North and occurs more often in winter than summer, facts which Dr. Ochsner pointed out corroborate the fact that blood vessel spasm by interfering with circulation is the cause of the condition. An early clue to the discovery of both the cause and cure of the condition came when patients with phlebitis were being given heat over the abdomen. The heat cage put over their abdomens happened to be long enough to reach down over part of their legs and to raise the temperature there also. This relieved the condition somewhat, and gave the surgeons an idea of the cause.—JANE STAFFORD.

ANGINA PECTORIS AND CORONARY THROMBOSIS

HOPE that such dreaded heart ailments as angina pectoris and coronary thrombosis can be conquered by chemical remedies is held out by discoveries announced by Dr. G. E. Hall, of the University of Toronto, at the meeting of the American Medical Association. The exact chemical that will be used has not yet been determined. It may be atropine, familiar as the "drops" doctors put in your eyes before testing your vision. This drug has shown some life-saving possibilities in dogs with experimental heart disease. More likely, Dr. Hall said, the chemical

treatment used for human heart sufferers will be a combination of atropine with some other drug or chemical. The chemicals must be the kind that can produce results by their effect on certain sets of nerves, because a reflex nerve action, Dr. Hall has found, is probably responsible for sudden deaths from heart disease with or without evidence of the disease of the heart's arteries known as coronary thrombosis. People likely to have a heart attack from mild exertion, cold air, work or anxiety, as is the case with sufferers from angina and coronary thrombosis, probably have a more sensitive reflex nerve mechanism than the average person. Existence of this reflex nerve mechanism was discovered by Dr. Hall in studies of dogs that could be given "heart disease" by cutting off the artery that supplies the heart muscle with blood. The reflex is from the afferent nerves leading away from the heart and producing the sensation of pain in angina, to the vagal nerves that lead to and stimulate constriction of the smaller arteries in the heart's muscle. When this reflex was abolished, either by cutting the pain nerves or by ether anesthesia, the animals with the simulated heart disease had no pain. The deaths were reduced from 75 per cent. to 25 per cent. in the nerve-cutting procedure, and from 50 per cent. to one per cent. when the pain nerves were put out of action by the anesthetic. Atropine abolished the reflex nerve action to some extent, as shown by reduction in pain and in deaths. A Boston surgeon has been getting similar results in human patients, Dr. Hall said, by cutting some of the nerves and thus abolishing the reflex. Dr. Hall hopes that a chemical can be found to accomplish the same end without resort to the hazards of an operation on nerves connected with the heart.

The reflex nerve mechanisem, starting with the pain nerves, causes a spasm of the small blood vessels which cuts down the blood supply to the heart, Dr. Hall believes. In coronary thrombosis this blood supply is already reduced and further reduction is likely to stop the heart completely. Sudden and often fatal heart attacks in patients who have not had coronary thrombosis is probably caused by a spasm set up by the same reflex nerve mechanism.—JANE STAFFORD.

THE SOURCE OF COSMIC RAYS

A COSMIC "tortoise and hare" race in inter-galactic space is suggested as the origin of the piercing "hard" cosmic radiation which comes down through the earth's atmosphere to strike every person on earth.

In a report to the American Geophysical Union meeting in Washington, Dr. Thomas H. Johnson, of the Bartol Research Foundation of the Franklin Institute, described the tortoise-hare race. According to this report, there is in the universe a source of cosmic rays which is emitting high-speed electrons in a fashion somewhat comparable to the emission of electrons from a vacuum tube filament in a radio set. These electrons, carrying a negative electrical charge, leave the source of cosmic rays charged positively. The more electrons go off the more the source becomes positive.

There is a dual effect of the positive charge: It acts as a brake on the fast electrons and eventually slows them down, and, at the same time, it speeds up any positively charged ions floating in inter-galactic space. These ions may be protons (the ions of hydrogen atoms) or ions of even heavier elements. Positive electrons, too, would be accelerated. Thus, as the race goes on, the massive ions (the slow tortoises) start to speed up and the swift hares (the electrons) start to slow down. At some point, far out from the source of the cosmic rays, the speeds of the electrons and the speeds of heavier ions will be equal. At this point, however, the energy possessed by the heavy ions will be nearly two thousand times as great as the energies of the electrons.

Cosmic ray studies near the top of the atmosphere with radio sounding balloons disclose that the soft component of cosmic rays—which never are detectable on earth—are formed by charged particles about equal in number. These, it is pictured, are the "weakened" electrons and positrons striking the atmosphere.

The hard component of cosmic rays, however, apparently is formed by highly energetic positively charged particles. It is the hydrogen ions—or even more massive charged atoms—which Dr. Johnson believes cause the hard component of cosmic rays found on earth.

These "hard" rays are now known to be the mesotrons, particles having a mass intermediate between protons and electrons. That mesotrons are formed in the top of the atmosphere by impacts with primary rays from the outside is known, Dr. Johnson said, because the mesotrons are particles whose half life is only about one two-millionth of a second.

Traveling at nearly the speed of light, they have time to get down through the earth's atmosphere, but their short life makes it virtually impossible for them to originate at any distance outside the earth's belt of air.—ROBERT D. POTTER.

CATALYSTS

LIKE a mediator in a labor dispute who draws employer and employees together in settling a strike, a catalyst in a chemical reaction draws incompatible molecules together and makes them carry out reactions more easily and quickly than is otherwise possible. But how a catalyst is able to do this is one of the mysteries of chemistry.

New discoveries announced by Professor Victor K. LaMer, of Columbia University, however, indicate the nature of liquid catalysts' potent power. Working with Drs. Edward S. Amis and Hazel M. Tomlinson, Professor LaMer's investigations should return thousands of dollars to America's chemical industry yearly.

Better catalysts means speedier reactions. This means greater chemical production without additional outlay in capital plant structures. A better understanding of the nature of liquid catalysts also means an inhibition of chemical reactions that destroy valuable products in such important fields as the making of soap, smokeless powder, lacquer, solvents and a host of other products.

Electricity, it is found, is the powerful tool of "negotiation" in the catalyst's rôle of making unwilling chemicals react. Molecules having like electrical charges upon them, normally dislike to react because there is a repulsion between them. If a liquid catalyst having the opposite electrical charge is brought up to them, how-

ever, the attractive forces created can overcome the repulsion. If the unwilling molecules come close enough the chemical reaction can occur, and the catalyst, unharmed and unchanged, is ready to do its job of negotiating between the next pair of antagonists.

A FRENCH STREAMLINE CAR

THAT France now has a light-weight motor car which can do 53 miles to the gallon of gasoline when running at 30 miles per hour, was reported to the World Automotive Engineering Congress meeting in New York City by French engineers J. Andreau and Charles B. Brull. At 50 miles an hour it will get 49 miles to the gallon of fuel and 39 miles to the gallon at 70 miles per hour. Even at speeds of 90 miles an hour it obtained 27 miles to the gallon of fuel.

This car, a streamlined version of the popular Citroen, seats five people and has a top speed of 93.5 miles an hour. Compared with a stock car having the same motor its performance showed half the gasoline consumption coupled with a 45 per cent. increase in speed.

Engineer Andreau is the designer who turned out the body of the famous "Thunderbolt" of Captain Eyston which holds the world's land speed record of 357.5 miles an hour.

In cars with the new Andreau body the hissing of the wind against the body is completely suppressed and the driver loses this criterion of speed. So efficient is the streamlining that the windshield remains completely clear. There is no frontal air pressure upon it to stick mud or insects to the glass panels. Rain drops run from the bottom to the top of the windshield and are instantly scattered so that no wiper is needed. There is no sidesway due to lateral wind and the stability is so great that the steering wheel has true finger tip control.

The economics achieved with such streamlining, even at ordinary driving speeds, are the engineers' answer in Europe to the severe taxes on motor fuel and on cars.

ITEMS

WE, meaning the earth, the other planets and the sun, are hurtling through space at about 180 miles a second toward a point on the north side of the Milky Way, Dr. Edwin Hubble, Mount Wilson Observatory astronomer, announced in connection with receiving the prized Franklin Medal of the Franklin Institute. The sun with its planets, according to the best theory, is rotating around the center of the Milky Way, as our galaxy of many thousand million stars is called, at a velocity of about 165 miles per second. With respect to the outside galaxies, seen as nebulae with powerful telescopes, Dr. Hubble finds that our own galaxy or Milky Way, consisting of a great system of stars, has a velocity of the general order of 60 to 120 miles per second in the general direction of higher north galactic latitudes. The motion through space of the sun, with the earth, is a composite of its motion in the galaxy and the motion of the galaxy itself. Dr. Hubble based his estimates of these motions on the extensive studies of the universe he has undertaken with the 100-inch telescope on Mount Wilson.

A SURVEY of major allergic manifestations in Colorado Springs, Colo., shows that 22.6 per cent. of the general population have one or more major ellergic manifestations. The following incidences were found: Hay fever, 10.06 per cent.; asthma, 3.6 per cent.; eczema, 2.9 per cent.; migraine, 3.7 per cent.; urticaria (hives), 3.2 per cent.; gastro-intestinal allergy, 3.3 per cent. A positive family history of major allergy was obtained for 35.7 per cent. of the subjects with major allergy. Approximately 16 per cent. of the allergic persons presented more than one major allergic manifestation. Dr. W. C. Service, of Colorado Springs, presents the results of this study in the *Journal* of the American Medical Association.

DR. IRVING S. WRIGHT, of New York, has found that people can get scurvy even if they are eating enough of the scurvy-preventing vitamin C. This apparent paradox is explained by the fact that a certain type of colitis, drastic catharsis and excessive use of alkalis such as soda bicarbonate may, any one of them, prevent absorption of vitamin C from the fruits and vegetables eaten. Dr. Wright's studies, announced to the American Medical Association, are the first to show this fact conclusively. He has also devised for the first time a method for determining whether or not the body tissues are absorbing vitamin C from foods satisfactorily.

CANNED heart beats of cardiac patients can now be preserved and heard phonographically at will through loud speakers, thanks to the device developed by a George Washington University Medical School junior, Edmund Ziman. Specialists who have used the new method foresee that it will make diagnosis of heart ailments more accurate. In difficult cases the physician can take a recording of the patient's heart and study it carefully, hearing it repeatedly. The heart sound records can also be used for teaching purposes and research.

THE highly destructive epidemic that has almost wiped out the sponge fisheries of Bahama-South Florida waters appears to have been due to a fungus-like organism, according to a report in *Nature*, signed by an international investigating committee composed of Paul S. Galtsoff, U. S. Bureau of Fisheries, and Hubert H. Brown, C. Leslie Smith and F. G. Walton Smith, Sponge Fishery Investigations, Nassau, N.P., Bahamas. The threads of the fungus-like organism were found in the flesh of sick and dying sponges, but not in healthy sponges or in those long dead. It does not seem to affect other forms of marine life.

COTTON may hit back at wood, which has taken a good deal of its business away *via* the rayon route, it was suggested at the recent meeting of the Virginia Academy of Science at Danville. Synthetic insulating lumber has been made out of pulped whole cotton plants, according to Herbert T. Bates and Professor Frank C. Vilbrandt, of Virginia Polytechnic Institute. The cotton plants, bolls and all, were pulped in a laboratory rod mill and the pulp squeezed between heated plates in a hydraulic press. The material thus made came out satisfactorily in tests for strength, density and heat insulation.