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THE NATIONAL HEALTH PROGRAM

A DEFENCE of the National Health Program and specific answers to various criticisms of it were issued by Surgeon General Thomas Parran, U. S. Public Health Service, in an address, read for him, to the National Conference of Social Work meeting in Buffalo on June 21.

"The National Health Program," in Dr. Parran's words, "represents the most comprehensive approach ever made towards solving the diverse and serious problems retarding our nation's health."

Its objectives, he stated, are to reduce the volume of sickness and ill health by extending preventive services to all areas and people, to provide for construction and maintenance of hospitals where needed and for support of existing hospitals, to reduce disability and lengthen life by more prompt and adequate medical care of the sick, to extend indirect health protection to the worker and his family by compensation for wages lost through nonindustrial sickness and accident, and to promote greater federal effort on research in prevention and cure of diseases not now controllable.

"It is not proposed that the health and medical services of the country be federalized," Dr. Parran explained. He pointed out the need to-day for "group cooperative action in the rendering of medical service no less than in payment for it" and warned against standardization and creation of vested interests that would resist future change. "The national health program does not recommend a national system of compulsory health insurance nor does it require nor coerce the states to do so," he said in answer to the charge that the national health program would lead to such a system.

To criticism of the estimated expense of the program, he pointed out that this amounts to a "*per capita* daily expenditure of one and seven eighths cents on the average for each of us."

"Much of the opposition on the part of many people, doctors, and patients alike, to any great extension of public medical service arises," he said, "because the public medical service now provided in so many communities is of such inferior quality. A similar distrust arises from the untrained health officer who still is cherished in so many of our communities. . . . "The greatest contribution that social workers can make to future sound progress in national health is by doing a better job in the provision of medical service for which you are now legally responsible."

Dr. Parran answered the charge that our present low death rate shows that we do not need a national health program by saying: "The death rates alone you must remember are not a measure of national fitness. They do not reveal the estimated 250,000 people who are suffering from silicosis, nor the 90,000 to 100,000 cases of pellagra which occurred last year in the South, nor the recent epidemic of scurvy in Maine."

NEW PICTURE OF ATOMS

SCIENTISTS have a new electrical picture of the unseeable atom—an egg-shaped globe of electrical charge.

The new atom portrait was painted verbally at the meeting of the American Physical Society at Princeton on June 24 by a four-man research team from Columbia University, Professor I. I. Rabi and Drs. L. M. B. Kellogg, N. F. Ramsay and J. R. Zacharias.

Telling their scientific colleagues that they had "confirmed the existence of the deutron quadrupole moment" the Columbia investigators described how they made the discovery of egg-shaped electrical pattern for deuterium atoms. Deuterons are the electrically charged nuclei of this rare kind of heavyweight hydrogen.

The new results of egg-shaped electrical distribution are helping the mathematical physicists in their important calculations of the inter-nuclear forces; forces which determine how all material matter is put together.

Running the ions through a special six-foot-long vacuum tank, the four different magnetic fields were used. The first field has a distorted kind of magnetism that spreads the ions out and deflects them into curved paths. As they come to a central collimating slit only those with a given orientation of their magnetic axis can pass through. Having passed the slit the lucky ones next encounter a homogeneous magnetic field that shifts their orientation by known amounts. And superimposed at this point is still another magnetic field created by a high-frequency radio transmitter. When the radio field is turned exactly to the frequency of the ions resonance occurs, and a fourth and final lopsided magnetic field is then able to focus the ions on the receiver.

What the experiment really detects is the resonance vibrations of the ions in terms of exactly known radio frequencies. Plotting out the measurements curves are obtained on which resonance points resemble spectral lines on a photographic plate. In fact, the operations of Professor Rabi's apparatus are in many ways comparable to those of a spectrograph except that he works with magnetic fields instead of rays of light. Where a spectrograph picks up light rays and forms characteristically-placed spectral lines, the Rabi equipment detects characteristic resonance points formed by the magnetic properties of the atoms and molecules. The placement of these points is likewise unique for each element.—ROBERT D. POTTER.

THE CHICAGO SYMPOSIUM ON COSMIC RAYS

COSMIC radiation, at sea level has only a hundred-millionth the energy of an x-ray beam. This determination has been made possible by a new "yardstick" for determining the absolute value of cosmic ray intensity described at the symposium on cosmic rays at the Univer-

sity of Chicago by Dr. J. Clay, of the University of Amsterdam.

Dr. Clay is one of a score of notable foreign scientific men attending the cosmic ray symposium, together with nearly a hundred American scientists, all experts in studying the behavior of these visiting radiations from outer space.

The "yardstick," devised by Dr. Clay, is the ionization in air produced by cosmic radiation. At sea level after suffering much stoppage on their way to the earth, cosmic rays create less electric current by ionization than is normally present in the human body as determined by "brain wave" experiments and other tests on the body's electricity. The cosmic ray ionization current is, in fact, one of the smallest electric currents with which scientists have to deal. For years the discovery of cosmic rays escaped detection.

The veteran scientist who first found cosmic rays was Professor Victor F. Hess, who sent up free balloons between 1912 and 1914 carrying instruments proving the presence of these radiations. Professor Hess, years later in 1936, received the Nobel Prize for this epochal discovery. A German Catholic, Professor Hess is now in the United States teaching at Fordham University because he is not in agreement with current Nazi views of science.

While—as the discoverer of cosmic rays—Professor Hess is perhaps the honored guest at the symposium at Chicago, he is only one of five Nobel Prize laureates in attendance. From the California Institute of Technology have come Professor Robert A. Millikan, pioneer American investigator of cosmic rays, and his colleague, Dr. Carl D. Anderson. Professor Arthur H. Compton, of the university, is director of the symposium, and present too is the famed theoretical physicist from the University of Leipzig, Dr. Werner Karl Heisenberg.

Besides Professor Clay's "yardstick" for cosmic rays the first day's session of the symposium was the announcement of the finding of Dr. W. P. Jesse, research associate of Professor Compton at Chicago, that the intensity of cosmic radiation increased 10 per cent. last winter over what it is this spring and summer. While many more observations will be needed, Dr. Jesse's results appear to show a seasonal effect of cosmic rays.

Much discussion too centered around the findings of Dr. S. A. Korff, former Russian baron who is now a member of the Bartol Research Foundation of the Franklin Institute, that the atomic particles known as neutrons are much more plentiful at high altitudes than at sea level. Their increase with height, moreover, is ten times as rapid as is the gradual increase in cosmic radiation itself. A splitting of nitrogen atoms into helium atoms was suggested by Dr. Korff as the cause of this discovery. Only within the last six months has it been possible to measure neutrons high overhead in the stratosphere. A new kind of neutron meter invented by Dr. Korff and Dr. William Danforth, of the Bartol Foundation, has made the work possible.

PREVALENCE OF TUBERCULOSIS

THE number of middle-aged and elderly patients in tuberculosis sanatoriums has increased in recent years and a greater number of tuberculosis deaths are occurring in the higher age groups, Dr. Richard H. Overholt told members of the American Sanatorium Association at their meeting in Boston on June 26.

Rehabilitation of these patients presents a real problem, Dr. Overholt declared. It is often difficult to isolate the older patients. They get discouraged with prolonged life in the sanatorium and frequently leave the hospital against advice and while still in the infectious stage. As a result, their children and grandchildren are again exposed to tuberculosis.

Differing with some medical authorities, Dr. Overholt believes permanent collapse of the affected lung by surgical operation will benefit many of these patients. The procedure "has been tolerated extremely well," he said, by patients in the fifties, sixties and seventies upon whom he operated.

The danger to other patients and the staffs of general hospitals from unrecognized cases of tuberculosis was pointed out by Drs. Edward X. Mikol and Robert E. Plunkett, of Albany, N. Y.

More than 40,000 patients with unrecognized pulmonary tuberculosis were sent to hospitals for other conditions during a single year, 1937, they estimate on the basis of a New York State Department of Health survey.

"From these patients there is danger of transmission of tuberculous infection to other patients and particularly to the nursing and medical staffs," the Albany doctors declared. Numerous investigations have shown that tuberculous infection and disease are more prevalent among nurses than among women in the same age groups in other occupations.

AMATEUR ASTRONOMERS FIND NEW COMET

A GROUP of Washington amateur astronomers has discovered a new ninth magnitude comet, the U. S. Naval Observatory believes. Looking through a small home-made six-inch reflecting telescope, the amateur observers found a moving object while watching the giant whirlpool nebula near Canes Venatici, constellation high in the northern sky near the big dipper.

Found on June 21, at about 11 P.M., the comet has the approximate position of right ascension 13 hours and declination plus 40 degrees. An accurate check on position will not be possible until the larger, more exact instruments of the U. S. Naval Observatory have been turned upon the comet. In the meantime, the approximate position has been wired to Harvard College Observatory, American clearing house for astronomical information, so that other observers may find it too.

The discovery was made accidentally, for the group from the National Capital Amateur Astronomical Association was studying the whirlpool nebula and was amazed to find one of the supposed stars in the field of view moving rapidly. Best rough estimate of motion is about three minutes of arc per hour, or roughly one tenth of the sun's diameter.

While the comet is too faint to be seen with the unaided eye, it may be approaching the region of the sun and earth and hence come into naked eye view. At the moment

a low-powered telescope will find it about midway on the line between the bright star Arcturus and the stars forming the "bottom" of the bowl in the big dipper.

Another way is to form an imaginary line through the Pole Star and the second star of the handle on the dipper and project the line down toward the horizon. Where these two lines meet is very near the new comet's position.—ROBERT D. POTTER.

HOSPITALS FOR TUBERCULOSIS IN THE SOUTH

THE need for better tuberculosis hospitals and sanatoria is greatest in the South, according to Dr. Joseph W. Mountin, of the U. S. Public Health Service, who spoke at the Boston meeting of the National Tuberculosis Association. He said that "Though there is undoubtedly need for improvement in each area, the southern states mark the line for first attack." "Need for hospital facilities, it is agreed, is probably most adequately expressed not by total population but by prevalence of tuberculosis as indicated by death rates for the disease."

He and his associates in the Federal Health Service, Elliott H. Pennell and Kay Pearson, reported that the South, with its high mortality rate, provides only two thirds of a bed for each tuberculosis death occurring there. At the same time western states with only a slightly greater death rate afford almost two beds per death. The northeastern and central regions, lowest in proportionate number of deaths, have available 1.7 and 1.5 beds, respectively.

Operating costs also ran lowest in the South of any section. This may be due wholly to economic circumstances, but it is more likely that completeness of equipment and quality of service exert considerable influence.

Another angle of the tuberculosis hospital situation was brought out by Dr. Ernest B. Emerson, of Rutland, Mass. He stated that "More progress has been made in the treatment of this disease during the past 40 years than in all the time that has gone before. Recognizing that there are other factors in addition to sanatorium treatment, the death rate is approximately a fifth of what it was forty years ago. Should the present trend continue, one can foresee that our hospitals and organizations may ultimately serve another purpose."

ITEMS

BROOKS' periodic comet—first found in 1889 and which has returned every seven years since that time—is now back within the range of telescopes of American astronomers, according to Dr. Harlow Shapley, of Harvard College Observatory, the American center for the distribution of astronomical information. Of the 17th magnitude, Brooks' comet is much too faint to be seen with the unaided eye. It was found on photographs taken at Lick Observatory, Mt. Hamilton, Calif., by Dr. H. M. Jeffers and Miss Adams Wright. The date of the discovery was June 17, at which time it was a diffuse object with nothing reported about its tail.

HAVING already shown that atomic energy can be released by smashing uranium and thorium atoms with neutrons, there is another element that theoretically is worth attacking. Protactinium, heavy radioactive metallic element, has a good possibility of being split by bombardment and yielding a large share of its atomic energy, according to Dr. John A. Wheeler, of Princeton University, who spoke before the American Physical Society at its recent Princeton meeting.

SULFANILAMIDE and sulfapyridine, already hailed far and wide as successful remedies for pneumonia, streptococcus infections, gonorrhea and other diseases, may prove equally effective as a remedy for typhoid fever. Good results with the chemical remedies in seven severe cases of typhoid fever are reported by Drs. E. H. R. Harries, Robert Swyer and Noel Thompson, of the North Eastern Hospital in London. The most striking result was obtained in the case of a man who had "walking" typhoid and for whom any experienced doctor would have predicted a long and perilous illness. Within ten days after entering the hospital he was in the recovery or convalescent stage. This patient was given both sulfapyridine and a serum, and the doctors suggest that this combination is probably the thing to use for treating other cases.

CONSIDER all ticks dangerous, advises the U. S. Public Health Service, even though only one in 300 of the eight-legged pests is capable of transmitting spotted fever, in the most heavily infected areas. If you live where ticks abound, or if your dog brings them to the house after cruising in the brush, better examine yourself all over at least once a day. If you find a tick has taken hold, remove him with a pair of tweezers or a small piece of cotton or paper, being careful not to crush it. Tick "juice" can be very dangerous. Drop the tick in kerosene or gasoline, to kill it. Swab the bitten spot with iodine, and dip your fingers and the forceps in alcohol or wash them thoroughly, the Public Health Service advises. It is highly advisable also to "de-tick" your dog at frequent intervals, with the same precautions.

THE new drug sulfanilamide appears to have value in treating smallpox. Four cases in which it largely prevented the eruption from the disease are reported in the *Journal* of the American Medical Association by Dr. Walter O. McCammon, of Springfield, Ky. Seven cases of smallpox recently came under the observation of Dr. McCammon. He used sulfanilamide in treating four, and there was only a slight eruption, which soon disappeared. The patients were back at work a week sooner than were the other three cases which were treated symptomatically and in which the typical eruption of smallpox developed. In an editorial the medical journal points out that no conclusions as to the value of sulfanilamide in preventing deaths from smallpox can be drawn from such a small number of cases. Although smallpox is increasing (there were 14,355 cases reported last year) the disease is now mild.

FOR transmitting television signals short distances, telephone engineers can now use ordinary telephone cables instead of the special coaxial conductors best suited for the relaying of television. Tests show that the ordinary cable pairs can be used when necessary in getting the signals from a spot television location to near-by coaxial cable or transmitter, although the loss of energy over the ordinary telephone channels is a million times greater than over the special television cables.