supply the clinical quarters and other costs. As the New Haven General Hospital is now a part of the Yale Medical School, the Psychopathic Hospital is expected to supply the cases under observation. There will be a close connection between the new psychopathic hospital and the New Haven General Hospital. Details of arranging for the gift will come before the Yale Corporation at its next meeting. Governor Lake of Connecticut recently appointed a commission to take charge of the plans for expenditure of the state fund of $500,000 for the hospital. Dr. Paul Waterman, of Hartford, is chairman of the commission, and Dean Winternitz, of the Yale Medical School, is a member.

Nature says: "The classical experimental plots which Lawes and Gilbert started at Rothamsted have been of the greatest service to agricultural science, and their importance is constantly increasing. Fundamental questions in the physics, chemistry, and biology of agriculture can be attacked with more confidence in the light of results obtained from long-continued field experiments carried out on a systematic plan. Further, the results are capable of statistical examination. The importance of the Rothamsted experiments led to the institution of a parallel series at Woburn in 1876 by the Royal Agricultural Society. The Woburn soil is light and sandy, but that at Rothamsted is a heavy loam. The two series of experiments enable instructive comparisons to be made between these two soil types. All interested in agricultural science received with concern the decision of the council of the Royal Agricultural Society to relinquish—owing to economic conditions—the Woburn experiments. Fortunately the danger has been averted. Arrangements have been made for the experiments to be continued under the auspices of, but legally distinct from, the Rothamsted Experimental Station. The general portion of the Woburn farm will continue under the direct control of Dr. A. J. Voelcker, who for many years has carried out the duties on behalf of the Royal Agricultural Society. The new arrangement will not only ensure the continuance of the valuable work already done, but will also lead to a closer contact with the work of Rothamsted."

THE Directoria de Meteorologia e Astronomia of the Brazilian Department of Agriculture has been divided into two separate services "Directoria de Meteorologia 2" and "Observatorio Nacional." The division for meteorology has been placed under the direction of Dr. Sampaio Ferraz. It will continue the climatological work established in 1909, unifying methods of meteorological research and publishing all available data for the past ten years. It is planned to issue nine bulletins by the end of the year. The division will establish a forecast service for central and southern Brazil; an aerological service for aviators and kite and pilot balloon stations; a special coast service for navigation; an agricultural meteorological service; a marine meteorological service; a special service of rains and floods, and the usual investigations in every department of meteorology with especial reference to longer ranges in weather forecasting. Rio Grande do Sul, Minas Geraes and São Paulo continue their state services, but under the supervision of the Directoria. The Reclamation Service of semi-arid northeastern Brazil will maintain its rain organization.

STATISTICS relating to the growth of the population of France show that last year the excess of births over deaths was 159,790, as against 58,914 in 1913, while the number of marriages has doubled. It is the first time since the war that statistics have been available for the whole of France, including the three departments of Alsace-Lorraine. The births were 834,411 last year, compared with 790,355 in 1913—an increase of 44,056. The deaths were 674,621 against 731,441 in 1913—a decrease of 56,820. The marriages were 623,869 last year against 312,036 in 1913.

UNIVERSITY AND EDUCATIONAL NEWS

BY the will of the late John McMullen, president of the Atlantic, Gulf and Pacific Dredging Company, Cornell University will

receive a bequest estimated at from one to two million dollars.

Fire which resulted in damage to equipment of approximately $20,000 and to the building of about $28,000 was discovered in the attic of the Richardson Chemistry Building, Tulane University, New Orleans, on the morning of July 6.

Dr. J. M. Bell succeeds Dr. F. P. Venable as head of the department of chemistry at the University of North Carolina. Dr. Venable, who was formerly president of the university, has resigned as head of the chemistry department, but retains his professorship.

Dr. Eugene P. Deatrick has resigned as instructor of soil technology, College of Agriculture, Ithaca, N. Y., to become associate professor of soils, and head of department, West Virginia University, Morgantown, W. Va.

Dr. Reuben S. Tour has been appointed professor of chemical engineering at the University of Cincinnati. Dr. Tour, who succeeds Dr. O. R. Sweeney, who resigned because of ill health, has served for several years as an expert for the government on nitrate and other chemicals, and will continue to act as consulting expert for the government.

Dr. Chas. C. Macklin has resigned his position as associate professor of anatomy in Johns Hopkins University to accept the professorship of histology and embryology in Western University, London, Canada.

Professor H. Lebesque, of the faculty of sciences, University of Paris, has been elected professor of mathematics at the Collège de France.

DISCUSSION AND CORRESPONDENCE

SECULAR PERTURBATIONS OF THE INNER PLANETS

To the Editor of Science: It is true, as Professor Poor states (Science, Vol. 54, pp. 30–34, 1921), that if we are at liberty to assume any distribution of density we like around the sun it is not difficult to account for all the secular perturbations of the four inner planets within their mean square errors, by means of the Newtonian law of gravitation. Professor Poor, however, does not appear to have read much of the paper of mine to which he refers,[1] or he would have noticed that the density we are at liberty to assume is subject to very severe limitations. It is possible to estimate the density of the matter at any distance from the sun directly; for the amount of light it scatters is known from observations of the zodiacal light and the corona, and by considering different possible constituents, whose scattering powers for given masses are known, we can determine limits to the density. Seeliger and de Sitter succeeded in explaining the residual secular perturbations of the four inner planets by means of two ellipsoids of matter, one close to the sun, and the other extending to the orbit of the earth. I showed, however, in the paper referred to, that the density of the matter between the orbits of Mercury and Mars can not exceed $\frac{1}{600}$ of that required by these writers, and in a later paper[2] I showed that the disturbing effect of the matter near the sun can not exceed 10^{-9} of that supposed to be produced by their inner ellipsoid. Accordingly, none of the secular perturbations of the inner planets can be explained by means of the Newtonian law of gravitation. The fact that the excess motion of the perihelion of Mercury is accounted for by Einstein's law therefore decides definitely in favor of the latter. Further, Einstein's law is the simplest that can account for it. None of the other nine residuals exceeds 3 times the corresponding mean error, and only three of them the mean error itself, and there is therefore no reason to regard them as anything but accidental errors.

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1 "The Secular Accelerations of the Four Inner Planets," *Monthly Notices*, R. A. S., Vol. 77, pp. 112–118, 1917.

2 "On the Crucial Tests of Einstein's Theory of Gravitation," *loc. cit.*, Vol. 80, pp. 138–154, 1919.