control and care of disease, the Commissioner of Health, on being satisfied that the said animals are to be so used, shall request the Commissioner of Police to surrender said animals as applied for by the said institutions of learning, hospitals or their allied institutes, and thereupon it shall be the duty of the Commissioner of Police to cause said animals to be surrendered by the Poundmaster to said institutes of learning, hospitals or their allied institutes for said uses."

AN affiliation has been established between the New York City Department of Hospitals and the medical departments of Columbia University, Cornell University and New York University, respectively, for the organization of Welfare Hospital as a teaching and research center. The medical staff of Welfare Hospital will comprise three college divisions: First Division, affiliated with Columbia University, College of Physicians and Surgeons; Second Division, affiliated with Cornell University Medical College; Third Division, affiliated with New York University College of Medicine. The three divisions are of equal rank. The following nominations for the medical board and staff of the hospital have been received from the affiliated medical colleges and have been approved: *Columbia University College of Physicians and Surgeons:* Dr. Randolph West, director of medicine; Dr. William Barclay Parsons, director of surgery; *Cornell University Medical College:* Dr. Irving Sherwood Wright, director of medicine; Dr. Ralph Firestone Bowers, director of surgery; *New York University College of Medicine:* Dr. Norman Jolliffe, director of medicine; Dr. William Howard Barber, director of surgery.

GROUND was broken on June 8 for the new twelve-story building of the Memorial Hospital for the Treatment of Cancer and Allied Diseases in New York City. The new hospital adjoins the Rockefeller Institute for Medical Research and the New York Hospital and Cornell University Medical College, with which Memorial Hospital is affiliated. The site was given by John D. Rockefeller, Jr. A year ago the General Education Board made a grant of $3,000,000 toward the erection and equipment of the institution. It is expected that the building will be completed within two years. Plans for the new hospital were drawn by James Gamble Rogers and Henry C. Pelton. The building contract has been awarded to Marc Eidlitz and Son, Inc. The building will front on Sixty-eighth Street. It will provide at the outset 168 beds, and will also have facilities for diagnostic and treatment clinics, surgery, research laboratories, out-patient service, x-ray and radium treatment.

CONSTRUCTION work on the extension of the University Hospital of the School of Tropical Medicine at San Juan, Puerto Rico, was begun on May 1. The plans which have been accepted call for an expenditure of $240,000 and will provide for extra research facilities in clinical and surgical tropical medicine. On May 27, three acres of the land east of the present research laboratories of the institution were transferred to the school for future building purposes. This land was formerly in the possession of the U. S. Army and has an approximate evaluation of $378,000. Plans have been practically completed for the new animal and primate house which is to be built on a part of this site. The school has also acquired the Island of Santiago, off the east coast of Puerto Rico, composed of thirty-four acres of wooded land, for a free ranging colony of primates. These animals are to be used in connection with the experimental work of the institution and for special studies in psychobiology under the direction of Dr. C. R. Carpenter, of Columbia University. Dr. Carpenter is now in Siam collecting primates, primarily the gibbon (Hylobates).

THROUGH the generosity of John B. Laing, of Lewisburg, West Virginia, president of the Little Stony Game and Fish Preserve, the Virginia Polytechnic Institute has recently acquired for the use of its biology department a tract of 2,500 acres of land in Giles County, Virginia. This tract lies adjacent to and between the Jefferson National Forest and lands aggregating 11,000 acres which the University of Virginia Biological Station and the Little Stony Game and Fish Preserve own. The 2,500 acre tract which will be conducted by the Virginia Polytechnic Institute has an elevation varying between 2,000 and 4,000 feet above sea level and is covered extensively with second growth hardwoods. Numerous springs, small streams and several bogs on the area provide a variety of flora and fauna which includes most species found from Virginia to Canada. It is planned to manage the area so that primitive conditions will be restored generally, although some demonstration wildlife and forestry management will be undertaken. Only eighteen miles from the college and near a good road, the tract will be of value for advanced students in wildlife conservation, forestry, botany, zoology, plant pathology and entomology.

DISCUSSION

AN OLD ANSWER TO A PRESENT-DAY PROBLEM

THE letters of Hess, MacClintock and Shepard published in SCIENCE for April 3, 1936, June 26, 1936, and June 18, 1937, deal with the hypothesis of a change in the earth's rate of rotation, proposed in order to produce a change in oceanic depths and thus to account

for the now submerged canyons along the continental coasts.

Professor Shepard makes the point that the parallel of 35° is a nodal line, at which there would be no change of sea level but about which sea level would oscillate, rising (for increased velocity of rotation) below 35° and falling for higher latitudes. Therefore, says Professor Shepard, the hypothesis is inadequate to explain submerged valleys north of 35°. Professor Hess in SCIENCE for June 18 replies in effect that the distribution of land and water is such that the nodal parallel of latitude might be 55° or 60°.

The problem of change of level due to changing ellipticity of the earth and ultimately to a change in its rate of rotation has a strong analogy to the problem of the tides. The deformation of the level surfaces is of the same type and a change in sea level due to a change of ellipticity is essentially a change of level due to a quasi-permanent long-period tide.

The problem of the effect of the distribution of land and water on the tide, in so far as the level surfaces of the water coincide with the level surfaces of the field of force, was treated in Kelvin and Tait's "Treatise on Natural Philosophy" but is set forth more clearly and at greater length in an article by G. H. Darwin and H. H. Turner in the *Proceedings of the Royal Society* of London (Vol. 40, pp. 303–315, 1886). This article is reproduced in Darwin's "Scientific Papers," Vol. I (Cambridge, England, 1907) pp. 328–339.

The nodal line for long-period tides is in latitude 35° 16′ for an earth completely covered with water. The correction for the presence of land changes this figure very little. Darwin and Turner, in evaluating it, schematize the actual coast line a little and thus obtain figures varying between 33° 29′ and 35° 04′. Professor Shepard's point seems therefore well taken; the nodal line remains near 35° north or south latitude.

This calculation ignores the self-attraction of the water. This may readily be allowed for in the case of an earth covered with water; it increases the tidal or rotational effects about 12 per cent. In the case of the actual earth theoretical solutions have been sketched, but no one has undertaken the enormous labor of a numerical evaluation. Presumably it affects the essential result but slightly.

These calculations assume steep walls at the coast line, with no laying bare of shoals or flooding of lowlands. It is to be presumed that effects of this sort have little effect on the final conclusion, especially in view of the fact that it is difficult to accept a change in the earth's rotation sufficient to cause any great change in the depth of the ocean within Recent, Pleistocene or even remoter time, a change sufficient to account for known submarine canyons.

The change in the difference between equatorial and polar radii due to a change of 1 per cent. in the rate of rotation is

$$\frac{1}{100} \times \frac{1}{289} \times 6370 = 0.22 \text{ kilometers}$$

The factor $\frac{1}{100}$ is the assumed 1 per cent. and may be replaced at pleasure by $\frac{2}{100}$ or by any other small fraction. The factor $\frac{1}{289}$ depends on the rate of rotation, the acceleration of gravity and the size of the earth, which latter appears again as 6,370 km, the mean radius.

This simple calculation assumes a rigid earth covered by water. The change in the difference between equatorial and polar radii then means difference in the depth of the ocean. It allows only for the direct effect of rotation and neglects the yielding of the earth and the self-attraction of matter. There is no absolutely unyielding substance, and matter is self-attracting. The proper factor to allow for these in the case of elastic yielding is imperfectly known, but, from observations of earth tides, appears to be between 0.70 and 0.85. The result of applying this factor is the relative observable change in level between land and water.

If the yielding were plastic instead of elastic, the factor would be about 2 for the ellipticity. But if we consider plastic yielding, we must remember that what we observe is, not the ellipticity, but the displacement of the solid, though plastic, earth relative to the sea and that this is a small second-order effect depending on the depth of the ocean. This means that the computed 0.22 km must be multiplied by a factor between 0.85 and almost zero. A change even of 1 per cent. in the rate of rotation since Pleistocene time seems improbable and an even greater change would not help much in accounting for known submerged canyons.

WALTER D. LAMBERT
U. S. COAST AND GEODETIC SURVEY

THE ANTISCORBUTIC PROPERTIES OF A SALT OF IRON AND ASCORBIC ACID

THE successful use of ferrous-ascorbic acid compounds[1,2,3] in the treatment of secondary anemias has already been recognized to some extent. This present communication concerns itself with an investigation of a salt of reduced iron and the levo-rotatory form of

[1] A. Szent-Györgyi, *Hoppe-Seyler's Zeit. f. Physiol. Chemie*, 225: 168, 1934.
[2] K. Maurer and B. Schiedt, *Biochem. Zeit.*, 285: 67, 1936.
[3] D. G. Friend, *Jour. Am. Med. Asn.* (in press), 1937.