times as many professors as they now have; Michigan, Illinois, Wisconsin and the other state universities will almost surely have four times as many. It is a modest hope that salaries will increase fifty per cent. The cost in a great university of a pension system such as that of the Carnegie Foundation, if all retire who are eligible, may forty years hence be expected to be in the neighborhood of one million dollars a year. If at that time trust funds bring 3 per cent. interest, it will require $30,000,000 to endow a pension system for a single university; and there will probably be not fewer than twenty such with a hundred others tending to become such.

Forty years hence some two billion dollars may be required to endow completely a centralized pension scheme for North America such as that of the Carnegie Foundation. Nor is this too long to look ahead. Young men of twenty-five, now entering the academic career and accepting smaller salaries in view of a pension at sixty-five, will not be honorably treated should it be withdrawn. Indeed they can possibly recover the pension at law.

The figures given here may seem somewhat appalling; but they are really not so. If pensions are only paid for disability at any period in the lives of university teachers and to their widows and minor orphans —I believe that no other kinds of pensions are desirable—the cost would be much less. It would represent a capital far beyond the possibility of private endowment, but would be a sum not considerable in comparison with the wealth of the country. Twenty times the amount could to advantage be saved each year by a reasonable reduction in the expenditure for alcoholic drinks. The economic gain to the nation and to the world from the research work of university professors far exceeds their salaries and their pensions, even though no account be taken of the value of their teaching or of their contribution to ideal ends. The more scientific men the world supports, the richer will it become, as well as the better. But the nation, the states and the cities must maintain their universities.

J. MCKEEN CATTELL

RECENT STEPS IN THE CONSERVATION MOVEMENT

SOON after the assembling of the Sixty-first Congress in extraordinary session, the Senate created a committee on the conservation of our natural resources, comprising Senators Dixon (chairman), Clark, of Wyoming, Beveridge, Dolliver, Dillingham, Heyburn, Dick and Briggs, of the majority, with Senators Guggenheim, Jones, Newlands, Overman, Davis, Bankhead and Smith, of South Carolina, of the minority. Of this committee, Senators Dixon, Newlands, Dolliver, Bankhead, Beveridge and Overman are members of the National Conservation Commission.

While the Rivers and Harbors Act passed by the Sixtieth Congress made but limited appropriations chiefly for continuation of current work, the provisions for surveys affecting new projects was exceptionally, indeed unprecedentedly, liberal; and specific provision was made for a legislative waterways commission, empowered to carry forward the framing of plans for waterway improvement, and for requisite investigations in this and other countries. This commission has now been organized by the Sixty-first Congress; it comprises Senators Burton (chairman), Gallinger (vice-chairman), Piles, Smith, of Michigan, Simmons and Clarke, of Arkansas, with Representatives Alexander, Lorimer, Stevens, Wanger, Sparkman and Moon, of Tennessee. Senator Burton was for a number of years chairman of the Rivers and Harbors Committee, and is chairman of the Section of Waters of the National Conservation Commission, corresponding to the Inland Waterways Commission.

On March 24 the four national engineering societies (American Society of Civil Engineers, American Institute of Mining Engi-

neers, American Society of Mechanical Engineers and American Institute of Electrical Engineers) held a joint meeting in the Engineering Societies Building in New York City devoted to the conservation of our natural resources. In the absence (due to illness) of Onward Bates, president of the senior society, Dr. James Douglas, president of the Institute of Mining Engineers, presided. Addresses were delivered on behalf of the four organizations on "The Conservation of Water," by John R. Freeman; on "The Conservation of our Natural Resources by Legislation," by Dr. R. W. Raymond; on "The Waste of our Natural Resources by Fire," by Charles Whiting Baker, and on "Electricity and the Conservation of Energy," by Lewis B. Stillwell. In addition to the set addresses, Dr. Douglas outlined in general terms the development of the conservation idea and the important part played by the engineering societies in directing attention to the nature and extent of resources and to the enormous wastes in utilizing them; while John Hays Hammond read a communication addressed to the meeting by President Taft commending its purposes and reiterating his deep interest in the natural resources and their conservation. The meeting was especially notable as marking a definite policy of cooperation on the part of the engineering interests of the country and of the four great national organizations in which these interests find expression. The attendance was large, including a number of engineers and guests from other cities.

W J McGee

SCIENCE BY CABLE

We reproduce the following cablegrams to the daily papers which, in so far as they are correct, are certainly of interest:

London, March 26.—Addressing the Chemical Society yesterday afternoon, Sir William Ramsey announced that he had succeeded in transmuting four different substances into carbon; namely, ziconium, thorium, hydro-lutorsilicic acid and bismuth. Experiments with silver nitrate, with the object of transforming silver in the same manner as copper is transformed into lithium, gave negative results.

Paris, March 23.—The astronomer Gaillot announced before the Academy of Sciences last night that he had discovered two new planets situated beyond Neptune, which is the outermost known planet of the solar system. M. Gaillot stated that he had used the methods which had enabled Leverrier by mathematical calculation to assign to Neptune a position within the boundaries of a certain region, which permitted of its discovery in 1846. M. Gaillot estimated that one of the planets was forty-five times and the other sixty times the distance of the earth from the sun, or 4,185,000,000 and 5,580,000,000 miles respectively. The planet Neptune it is estimated is 2,800,000,000 miles from the sun.

Berlin, March 26.—Professor Richard Greeff, of the Berlin University Eye Hospital, announced the discovery of the germ of trachoma. The finding of this germ resulted from experiments with apes conducted with funds supplied by the German government.

SCIENTIFIC NOTES AND NEWS

The return of Lieutenant Ernest H. Shackleton, of the British navy, from his Antarctic explorations and his remarkable results in reaching a point within a hundred miles of the South Pole, in reaching the magnetic pole, in ascending Mt. Erebus and in making discoveries of importance in many directions, were announced in the daily papers of March 24.

Dr. E. Pflüger, professor of physiology at Bonn, has been awarded the gold medal for art and science by the German emperor, on the occasion of the celebration of the fiftieth anniversary of his appointment to the full professorship.

Dr. Albrecht Penck, professor of geography at Berlin, has been elected an honorary member of the Geographical Society at Rome.

Mr. B. E. Dahlgren, formerly modeler at the American Museum of Natural History, New York, has been appointed modeler to the botanical department of the Field Museum of Natural History, Chicago. Mr. Dahlgren is now in Jamaica making studies for the reproduction of a series of tropical plants representative of structural characteristics as well as economic use.