be held for the reading of papers: Section A for archeology, history, literature and the social sciences; Section B for zoology, botany, physics, chemistry, astronomy, mathematics and applied science. The annual academy dinner will be held on Friday evening, April 6. Following the dinner Professor Laurence M. Gould, of Carleton College, will give an illustrated lecture on some phase of his experiences and observations as geologist with Commander Byrd's first South Polar Expedition.

PRESIDENT ROOSEVELT has transferred the Bureau of Mines from the Department of Commerce to the Department of the Interior where it was prior to the Hoover administration. The transfer will become effective in sixty days unless vetoed by the Congress.

BY an agreement between the War and Interior Departments the whole of Bedloe's Island will be made a national monument and will be transferred to the Office of National Parks, Buildings and Reservations.

THE Museum of the American Indian, Heye Foundation, will erect on a six-acre plot owned by the museum in the Bronx, New York City, full-sized reproductions of American Indian dwellings and ceremonial buildings.

DRS. WILLIAM J. AND CHARLES H. MAYO, of the Mayo Foundation, Rochester, Minnesota, have given $500,000 to the University of Minnesota to supplement the endowment of $1,500,000 provided by them originally for the foundation. The Mayo Clinic opened in 1915 when the original fund had grown through interest to $2,000,000.

DR. ANNIE J. CANNON, curator at the Harvard Observatory, who last year received the prize of $1,000 awarded by the Association to Aid Scientific Work by Women, has contributed the amount of the prize to found the Annie J. Cannon Prize, to be awarded every three years for a distinguished contribution to astronomy by a woman. The fund will be administered by the American Astronomical Society, and the first award will be made in December.

THE London *Times* writes: The practise which is being increasingly adopted in industry and commerce of setting scientifically devised intelligence and psychological tests to applicants for employment has now been put into use by Messrs. Peek, Frean and Company, Limited, who employ some 4,000 people at their works in Bermondsey in the production there of over 40,000,000 biscuits a week. During the last few days a number of juvenile applicants for posts have been interviewed and tested. Mr. J. H. Fullwood, employment manager at the works and president of the Institute of Labor Management, stated recently that investigations showed that the labor turnover at the works was too high and uneconomic. The National Institute of Industrial Psychology were approached, and certain specially designed tests were supplied. The firm had now adopted a four-years' plan for the scientific selection of juvenile workers, and already the results indicated that the tests were sound, and he was hopeful that they would bring about a substantial reduction of the wastage of labor turnover.

DISCUSSION

A SUGGESTION REGARDING THE CHEMICAL FORMULAE OF COMPOUNDS CONTAINING HYDROGEN AND OXYGEN ISOTOPES

PRIOR to the discovery of the isotope of hydrogen of mass 2, the isotopes of chemical elements did not introduce difficulties in the writing of chemical formulae, because it had been found impossible (with any technique known at the present time) to separate into its component atoms an isotopic mixture. With the discovery of hydrogen of mass 2, however, we are faced with not only the possibility of a complete separation of the hydrogen isotopes from each other but also with the fact that in all probability we are upon the threshold of a new series of organic compounds in which hydrogen of mass 2 may be substituted either wholly or in part for hydrogen of mass 1. It therefore appears imperative that some uniform scheme be devised to designate the structural formulae of such organic compounds.

Various suggestions have already been put forth. It has been suggested that hydrogen of mass 2 be called "deuterium," with hydrogen of mass 1 to be known as "protium." It has been further suggested that a hydrogen of mass 3 may exist and that this could be called "tritium." Some workers have suggested that the symbols for these isotopes of hydrogen might be "D" for deuterium and "Pm" for protium. No one has as yet suggested a symbol for tritium, although apparently by analogy this would be "Tr."

The writer objects strongly to the use of such symbols, believing that they would greatly confuse the beginning student and would greatly slow up the thinking processes of even the expert. An alternative suggestion which has already been used rather extensively is to employ both subscripts and superscripts, the superscript indicating the mass of the isotope, the subscript having its usual meaning in chemical symbols; thus H_2^2O would indicate water containing only

the hydrogen isotope of mass 2, HH^2O would indicate water one half of the hydrogen of which contained the isotope of mass 2, the other half having mass 1, and H_2O standing for water containing only the isotope of mass 1. While these designations appear to be satisfactory for simple compounds, the use of superscripts introduces difficulties when the formulae of complex organic molecules are involved, particularly so if one desires to write graphic formulae. There is also an appreciable increase in printing cost to be considered.

I would like to suggest a further alternative. Hydrogen of mass 2 is already extensively referred to as "heavy hydrogen." This could be designated in typesetting by a bold-faced letter "**H**." Thus, we can have $\mathbf{H}_2O$, **H**HO, and H_2O, indicating, respectively, water containing only heavy hydrogen, water containing one-half heavy hydrogen and water containing no heavy hydrogen. Similarly, we can write organic formulae in exactly the same way that we write them at the present time, excepting that all the hydrogens or particular hydrogens are printed, using the bold-faced type to indicate that these hydrogens have mass 2.

If hydrogen of mass 3 is ever produced in sufficient quantities to be used in preparing chemical compounds of known structure, its presence can be indicated by a bold-faced Old English letter "H."

Similarly, oxygen of mass 18 can be indicated by a bold-faced letter "O" and oxygen of mass 17 (which appears to be the rarer of the oxygen isotopes) can be indicated by a bold-faced Old English letter "O."

Such designation of the hydrogen and oxygen isotopes will make possible the use of graphic formulae of organic compounds which differ in no way from the present formulae, excepting that particular hydrogens or oxygens will be designated as for a special mass, differing from the mass of other hydrogens or oxygens which may be united to form similar compounds, but compounds which have different physical (and perhaps chemical) properties. Thus, for example, we may have mono-**H**-benzene, *o.* (or *m.* or *p.*) di-**H**-benzene, 1.2.3. (or sym.) tri-**H**-benzene, etc., for all the known organic compounds, without introducing any ambiguity into the nomenclature.

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PARA-ORTHO CONVERSION OF DEUTERIUM[1]

USING thermo conductivity method we have succeeded in showing the para-ortho conversion of deuterium at 78°, 53°, 20.4° Kelvin changes in readings relative to normal deuterium being in ratio 3 to 11 to 30, respectively. This agrees with the Bose-Einstein statistics if the nuclear spin of the deutron [deuton?] is the one which gives excess concentration of 3.3, 11.1 and 31.2 per cent., respectively, of orthodeuterium at these temperatures relative to normal deuterium. Velocity constant of reconversion of orthodeuterium by oxygen at room temperature is sixteen times smaller than that of parahydrogen, being 0.57 liters per mol, per min.

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[1] Received by cable.

GOVERNMENT RESEARCH

IN a recent number of SCIENCE (January 26) attention was called to the reduced appropriations to the U. S. Department of Agriculture, which have necessitated drastic cuts in experiment and scientific research, including the dismissal of 567 workers in scientific projects. It is rather difficult to understand the necessity for so much retrenchment in established activities when the government is at the same time spending vast sums (stated to be over $200 per second) on its national recovery program. An explanation attributed to Assistant Secretary Tugwell is given in an editorial review in the current number of *The Reader's Digest.* This statement repeats the basic idea of the New Deal, that the purchasing power of the farmers and factory workers must be restored, for which at least 5 billions of dollars was needed. It then adds: "Meantime ordinary government expense had to go on *and this expense had to be kept down and carefully watched.* To take care of the extraordinary expense there had to be also an extraordinary budget. . . . A business man may borrow large sums to modernize his plant or find new markets."

Probably no one will deny the advisability of a business man borrowing, under certain conditions, to modernize his plant or to find new markets, but his wisdom might well be questioned if, in making these improvements, he allowed his existing efficient machinery to deteriorate so that it would have to be replaced, resulting not only in additional cost but also in delay in getting into effective production on the new scale. Similarly, even though we may be in sympathy with the government's recovery program and appreciate the need of efficiency and economy in ordinary government operations, nevertheless we may question whether wisdom is being shown in drastic budget reductions which mean actual elimination of many lines of investigation and consequent interruption of fact-finding activities vital to the efficient administration of many government functions.