Dr. L. Bauman, formerly assistant professor of medicine and director of research, at the University of Iowa has been appointed associate in medicine at Columbia University and assistant visiting physician to the Presbyterian Hospital.

The following appointments to professorships in the University College of Wales, Aberystwyth, have been made: Professor G. Owen, of the University of New Zealand, in physics; Professor W. H. Young, of the University of Liverpool, in mathematics; A. E. Jones, of the University of Wales, in agriculture; Captain W. T. Pugh, in geology.

DISCUSSION AND CORRESPONDENCE

A POSSIBLE SOURCE OF COSMICAL ENERGY

According to the theory of J. J. Thomson, atoms are complex structures of systems of positively and negatively charged particles (such as, *e. g.*, helium nuclei and electrons) in rapid rotation and held in position by an equilibrium of their mutual forces.

Various phenomena can be explained and a possible source of cosmical energy be found by the simple assumption that some constituents of the subatomic structure retard their speed in eons and thereby increase the weight of the atoms.

It was recently pointed out[1] that the different atomic weights of the isotopes, such as, *e. g.*, the different forms of lead, may be due to "age" of the chemical elements, whereby the different types of atoms are subject to a chemical evolution. In the case of lead the radioactive or young lead possesses the lower atomic weight and density than the common or old lead. According to this hypothesis the radioactive, that is newly formed, lead will eons hence have a higher atomic weight and density, while the common or old lead had eons ago a lower atomic weight and density. All other elements should be subject to this aging process, and by the catching of further electrons and helium nuclei transmute into elements of higher atomic weight. Evidence of this is seen in the occurrence of the chemical elements and their distribution upon the earth's surface, where elements of the same period are mostly aggregated in definite mineral types.

Assuming that the orbital motion of the electrons is lessened in a certain time interval, it is evident that a steady and continuous amount of energy apparently disappears. This energy perhaps reappears as cosmical energy, for the principle of conservation makes it inconceivable that such a steady drainage of energy should be constantly wasted.

If such a theory is substantiated, a link between the extreme sciences of the macrocosmos and microcosmos, astrophysics and subatomic physics, will be established and stellar evolution will be based upon a chemical evolution whereby all types of atoms change until they finally become radioactive, that is unstable, and disintegrate again. The smoke-rings of some planetaries are then perhaps clouds of helium gas formed by the radioactive disintegration of the nuclear star, and would thus indicate the last stage of chemical and stellar evolution and the beginning of a new series.

Ingo W. D. Hackh

Berkeley, Calif.

[1] Science, 49, 328, 1919.

THE IMPERFECT STAGE OF LEPTOSPHÆRIA TRITICI OF WHEAT

In connection with studies of anthracnose of small grains a species of what seemed to be an *Ascochyta* has frequently been found on dead straw. Recently, while culturing *Leptosphæria tritici* the relationship of these two forms was revealed.

The pycnidial fruiting bodies grow side by side with the perithecia of *L. tritici* on dead wheat straw in the spring and are difficult to distinguish from them, both being dark, submerged and of the same size, though the ostioles of the perithecia are more protruding. The pycnidia are filled with guttulate spores, usually two-celled and approximately 12–20 $\times$ 3.5–4 μ, their shape, size and manner of production suggesting *Ascochyta graminicola* as described by Frank. Single spore cultures of the ascospores of *L. tritici* obtained by the

Hansen method of isolation, produce on potato agar and on sterile straw, pycnidia and pycnospores like those found growing with the perithecia on the wheat plant.

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SCIENTIFIC BOOKS

A BRIEF SURVEY OF SOME RECENT CHEMICAL LITERATURE

NOTWITHSTANDING the extraordinary demands which have been made upon the chemists of this and other countries during the recent years, there has been a considerable number of contributions to chemical literature. It has, however, also been a period in which reviewers were difficult to secure and the editor's table has accordingly been filled with an accumulation of material which the writer has been asked to pass in brief review. He has regretfully to confess to responsibility for a further considerable delay in the accomplishment of the undertaking. As a result, a number of the titles mentioned below will be recognized as already familiar; but it may, nevertheless, be useful to recall them.

In the field of inorganic chemistry Alexander Smith's "Inorganic Chemistry" (The Century Co.) has appeared in its third edition, in which the well-known character of that work is strictly maintained, the changes being chiefly those of amplification. Other standard texts which have recently appeared in revised form are: Holleman-Cooper's "Text-book of Inorganic Chemistry" (5th edition, John Wiley & Sons); Newell's "Inorganic Chemistry for Colleges" (D. C. Heath & Co., 2d edition), and Cady's "Inorganic Chemistry," which has appeared in a simplified form, under the title "General Chemistry" (McGraw-Hill Book Co.). In none of these has there been any marked change in the manner in which the subject is treated. Professor H. G. Byers, of the University of Washington, has contributed an interesting new volume ("Inorganic Chemistry," Charles Scribner's Son's) which is more or less frankly constructed along the lines of Alexander Smith's texts, and, in scope, lies between his "College Chemistry" and the larger work mentioned above. It is rather a pity that the publishers saw fit to dress this material in a garb so exactly like that of Professor Smith's books that, in appearance of the printed page, the books are indistinguishable, which creates an unwarranted impression of reproduction of material, in view of the general similarity of treatment.

In the "Principles of Chemistry" of Dr. Joel H. Hildebrand (The Macmillan Co.) there is to be found a volume which has real freshness and originality of treatment of its subject matter. With a minimum of descriptive matter, for which the student is referred to existing texts, the fundamental concepts are clearly stated and well illustrated for beginners. The book contains much for the consideration of thoughtful teachers.

Two texts for secondary schools are to be found in the editor's collection, one by Dr. B. W. McFarland, of New Haven ("A Practical Elementary Chemistry," Charles Scribner's Sons), which presents a thoughtfully arranged course of instruction in which the laboratory forms the central feature, and another by Charles E. Dull, of Newark ("Essentials of Chemistry," Henry Holt & Co.), which has appeared since the beginning of the war and in which particular stress is laid on the importance of the science, through the use, as examples, of the chemistry of common things.

Laboratory manuals to accompany the texts of Newell and of Byers have been issued by the publishers of these texts; also one to accompany the well-known text-book of McPherson and Henderson (Ginn & Co.). Other manuals by W. A. Noyes and B. S. Hopkins (Henry Holt & Co.), W. J. Hale (The Macmillan Co.) and W. M. Blanchard (D. Van Nostrand Co.) make no reference to any specific text. All of these manuals are carefully prepared, and while each has some particular points of excellence, the material is presented along well-recognized lines. The "Laboratory Study of Chemistry," by H. R.