cialists in the fields of the biological sciences and of the social and economic sciences, not to mention the humanities, on reading the recommendations would be conscious of serious gaps in it. They would find no references to biological sciences, except as they may be involved in medicine, and no direct recognition of the possible importance of social and economic sciences. The nearest to such recognition is the oblique statement, "It is our hope and belief that the provision of funds for the natural sciences would, in some measure, free university funds for use in the other fields." This statement echoes faintly, too, the pressure from many universities and colleges for support from the Federal Government, and indeed violates some of the principles enunciated earlier in the report.

The Bush Report is probably at least partly responsible for four bills relating to governmental support of science which have been introduced in the United States Senate and referred to the Subcommittee on War Mobilization of the Committee on Military Affairs, of which Senator Elbert D. Thomas, of Utah, is chairman; and for one bill introduced in and passed by the House of Representatives but not acted on by the Senate. These bills are: S. 825, sponsored by Senator Byrd; S. 1248, sponsored by Senator Fulbright; S. 1285, sponsored by Senator Magnuson; and S. 1297, sponsored by Senators Kilgore, Johnson and Pepper. The House bill was sponsored by Congressman May. By arrangement among the sponsors these bills will be considered at joint hearings with the hope that out of them a new bill may be drawn that will be acceptable to all who are interested.

It is at the hearings that scientists may most effectively present their views. The sponsors of the bills desire the views of scientists so that the final result shall be as advantageous for the country as possible. Unfortunately the pressures upon members of Congress are so great that they can not be expected to attend all or any considerable part of the hearings. It follows that all presentations of data and conclusions should be in writing, even if those making them appear in person.

According to present schedule, hearings of representatives in the fields of the biological sciences will be on October 24; in the fields of the physical sciences, on October 25 and 26; in the fields of the social sciences, on October 29; and in the fields of engineering, on October 30.

If it is impossible for any of the affiliated societies to send representatives to present their written statements, the Association will undertake to get them properly before the Senate Committee and into the records of the hearings.

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PROPOSED UNIT FOR HIGH VACUUM

IN a recent letter[1] Dr. Paul E. Klopsteg has expressed himself in favor of adopting the suggestion made by F. H. Townsend,[2] of a unit for high vacuum which like the unit of sound intensity is based on a logarithmic scale. If we denote the pressure in *mm* of mercury by P, then the "units of vacuum" (u) are given by the relation

$$u = -10 \log P$$
$$\text{Thus } 1 \times 10^{-3} \text{ mm} = 30 \text{ u}$$
$$2 \times 10^{-5} \text{ mm} = 47 \text{ u.}$$

It should be observed that the reason for adopting a logarithmic scale in the case of sound intensity is based on the validity of Fechner's law. On the other hand, in the case of gases, it is extremely convenient to measure pressures by a direct-reading gauge, such as the McLeod type. Furthermore, at low pressures most properties of gases vary practically linearly with the pressure, so that it is possible to extrapolate to very low pressures by means of gauges calibrated at the higher range of pressure by means of a McLeod gauge.

The writer can see no advantage whatever that would be gained by adoption of the suggested "unit of vacuum." Rather, it would be a source of confusion in both laboratory and factory work, and would certainly be of no help in the application of any equations derived on the basis of the kinetic theory. We have a very logical unit of pressure, the dyne per cm^2 (1 microbar). Let us stick to c.g.s. units as much as possible.

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MYCOFLORA OF BUDS

No reports on the occurrence of fungi and bacteria in the tissues of normal foliar buds have come to the writer's attention. Such organisms are known to occur in nectaries and other floral structures. Cultures from entire buds, bud scales and meristems from several species of trees were prepared on various media in this laboratory. In every instance, the materials were surface-sterilized, by accepted techniques, previous to implantation in the nutrients. The buds were selected from apparently healthy trees and from external appearances were perfectly formed and normal. Included in the investigation were species of *Aesculus*, *Cedrela*, *Fraxinus*, *Ginkgo*, *Magnolia*, *Populus* and *Robinia*. Several species of fungi and bacteria and a few actinomycetes were isolated. Most

[1] SCIENCE, 102: 208, 1945.
[2] *Nature*, 155: 545, 1945.

of the fungi belong to the Ascomycetes and the Fungi imperfecti. In at least two instances, a distinct specificity of fungi for certain species of trees was exhibited. Results indicate that some species of fungi are quiescent during the period of bud dormancy. In addition, although many of the species could be isolated throughout the year, they were most abundant at the time of the opening of the buds. Some species were obtained at this time which were not observed at any other period.

Since the frequency of fungi and bacteria increased with the opening of the buds, the question is raised of the possible physiological rôle these organisms may have in bud and shoot development. It has been reported in the literature that auxins capable of accelerating the development (". . . die Entwicklung . . . fördern können") of winter buds of lilac (*Syringa vulgaris*) were isolated from culture media in which *Saccharomyces cerevisiae* and *Penicillium luteum* were grown.[1]

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SCIENTIFIC BOOKS

JOHN MERLE COULTER

John Merle Coulter. By ANDREW DENNY RODGERS, III. viii + 321. Princeton, N. J.: Princeton University Press. 1944. $3.75.

THE life of a botanist, like that of an industrialist, may be a "success story," advancing from the humblest beginnings, not indeed to wealth and power, but to dignity and glory. The life of John Merle Coulter, moreover, like that of many another recent American botanist, coincided with the great advance of botany in this country from its own humble beginnings to its present peak of prestige. Coulter, the son of a missionary to China, landed in this country in 1854, aged three years. At that time Torrey was working on collections made in surveying routes for a railroad to the Pacific. Young Gray had but recently published his "Manual," and Chapman had not yet written his "Flora." The Smithsonian Institution was about six years old, the National Academy of Sciences not yet in existence. The alternation of generations was unknown and the origin of the embryo of flowering plants a mystery. The cell theory was a novelty, physiology was little more than a name and evolution not even that. Botany was the determination and naming of plants "according to the natural system." In contrast with this pastoral scene, the last years of Coulter's life were spent at an institute for plant research where taxonomy is eschewed and botany merges into biochemistry—replete with auxins, hormones, vitamins and all the wonders of the age. Botany had become plant physiology, pathology, mycology, anatomy, ecology, genetics and other things. It is the story of these years that Andrew Denny Rodgers unfolds for us in the latest of his works.

It is perhaps not always now remembered that Coulter earned recognition first as a taxonomist, beginning with the collection of the flora of Indiana and working up to the great revision of the Umbelliferae with J. N. Rose. But Coulter had genius not only for rising to eminence in a particular field but for adapting himself to the changing spirit of the times and assimilating what was new into the old frame of ideas. He early became interested in morphology, and successfully used new morphological criteria in his taxonomic work. He founded the *Botanical Gazette,* chiefly for taxonomic articles, and lived to see it become one of the chief vehicles in the world for the publication of botany in all its branches. Taxonomy remained until the end one of his chief interests; but he was quick to embrace the evolutionary doctrine, and to turn his morphological learning into phylogenetic research and speculation. Perhaps more than any other botanist he is identified with the great advance of the last century in botanical thought.

The author submits "that employment of a biographical method does not necessarily interfere with either accuracy or fullness of historical narrative." To which contention the present reviewer would reply that this is not really a biography at all; it is a panorama with a central figure. Every contemporary figure in American botany is treated in some detail, and the narrative frequently wanders far from its announced theme for dozens of pages at a time. For instance, one third of the chapter entitled "The Years at Wabash College" is devoted entirely to other botanists. Chapter 10, entitled "Pure and Practical Science," contains 15 consecutive pages in which Coulter is scarcely mentioned. This is not said in disparagement of the work. On the contrary, such an array of highly accurate historical information is impressive and can not fail to be useful. But it is scarcely biography.

Coulter was not only a progressive scientist; he was an inspiring teacher and an able administrator; as he developed the Department of Botany at the University of Chicago, he demonstrated his ability to attract others who became leaders in their fields. To these qualities his fame owes as much as to his intellectual

[1] Anneliese Niethammer, *Gartenbauwissenschaft,* 14: 651, 1940.