Book Reviews

The American High School Today. A first report to interested citizens. James B. Conant. McGraw-Hill, New York, 1959. xiii + 140 pp. Cloth, $2.95; paper, $1.

An Essay on Quality in Public Education. Educational Policies Commission. National Education Association of the United States, Washington, D.C., 1959. 31 pp. $0.35.

When James B. Conant resigned his appointment as ambassador to Germany, he began immediately, under a grant from the Carnegie Corporation, to study the American comprehensive high school. He and four collaborators visited 103 high schools, plus four city school systems, in 26 states. Information was gathered on course offerings, the courses actually taken by students of different ability levels, and the effectiveness with which the schools achieved different educational objectives.

Specialized institutions such as the Bronx High School of Science may be desirable under certain circumstances, but those circumstances are rarely found, and it is the public, comprehensive, general-purpose high school that serves most students of high-school age, be they brilliant or dull, academically highly motivated or restlessly waiting for the day when they can escape school and get a job. Conant undertook to find out whether this kind of school can "at one and the same time provide a good general education for *all* the pupils as future citizens of a democracy, provide elective programs for the majority to develop useful skills, and educate adequately those with a talent for handling advanced academic subjects."

Most high schools he studied were not doing an adequate job on all three tasks, but some were. These facts led him to conclude that no fundamental change in the prevailing structure of the American high school is necessary, but that improvements are widely needed.

In the same week that Conant's report appeared, there also appeared *An Essay on Quality in Public Education,* a statement by the Educational Policies Commission of the National Education Association and the American Association of School Administrators. The two documents reinforce each other. Both are intended to be read by members of school boards and by citizens interested in appraising the quality of schools in their own communities. Both are middle-of-the-road documents far from the extremist positions that have marked much of the recent debate over American education. On a number of recommendations, the two are in agreement. Both agree that the high school must provide general education for all, vocational education for some, and intellectually rigorous education for the academically talented. Both agree that there should not be separate tracks or programs, such as a vocational curriculum and a college preparatory curriculum, but rather that there should be a variety of academic and vocational offerings within which good guidance can provide an appropriate and individually selected program for each student. Both agree that much more emphasis should be given to the teaching of foreign languages and that those students who are able to do so should take three or four years of one language—enough to gain useful facility in reading and speech—instead of quitting after two years or instead of taking inadequate amounts of two different languages. Both agree that small high schools are inefficient and can be maintained only at extravagant cost or by sacrificing quality; to be efficient a high school should have a graduating class of at least 100 (Conant) or a total four-year enrollment of 500 (EPC); to the maximum extent possible smaller high schools should be combined into larger schools.

The two reports are similar in intended audience, in their basic point of view, and in several recommendations, but they differ sharply in the way in which the recommendations are presented and in the points given greatest emphasis. Under the heading "Prerequisites to High Quality in Education," the EPC report concludes with a formula for determining whether or not a school is adequately supported: "In a school district of adequate size the minimum annual per-pupil current expenditure needed today to provide a good educational program is about 12 percent of the salary necessary to employ a qualified beginning teacher in that district. . . . The minimum starting salaries for qualified beginning teachers in any community should equal the average of the salaries offered to new college graduates in that community." The implication is clear that if the community supports its schools this well, the community will have schools of high quality.

Conant agrees that more money is needed, but addresses himself to the ways in which that money should be spent and to specific changes in school organization and policy, some of which require no money at all. The 21 recommendations he collects in one chapter are down-to-earth proposals that could be put into effect next semester, next year, or year after next. On any scale of specificity, Conant comes out far in the lead. Perhaps this is a difference between an author and a committee. Conant could write what he thought, while the Educational Policies Commission could write only what was agreed to by 19 members. However one explains the difference, the Conant report provides much the better basis for community action. On too many points, I fear, people can agree with the words of the EPC report while holding quite different views of what those words mean. One can agree or disagree with Conant, but both sides will know precisely what they are talking about. The recommendations Conant makes are specific, and each has been found to work effectively in one or more high schools.

In a foreword to Conant's report, John Gardner concludes, "If I had to recommend a single piece of reading to all Americans who want to improve their schools, I would ask them to read this report." I agree.

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Bacteriological Code, International Code of Nomenclature of Bacteria and Viruses. Edited by the editorial board of the International Committee on Bacteriological Nomenclature. Iowa State College Press, Ames, 1958. xxii + 186 pp. $3.50.

It has long been apparent that the bacteria and the viruses occupy an intermediate position between the plant and animal kingdoms, but the early suggestion that they be considered as belonging to a separate kingdom, the Protista, was never generally accepted. The formal classification of at least the bacteria as plants has not been seriously disputed, perhaps in part because the point appears of little importance to the majority of bacteriologists. At the same time, the limitations of the Botanical Code as applied to these forms has been clearly evident. This inadequacy, or rather the special requirements of a bacteriological code of nomenclature, was

recognized by the First International Microbiological Congress, in 1930, by the appointment of the first of a series of International Committees on Bacteriological Nomenclature, which have evolved the structure laid down in the present volume.

These committees and their subcommittees have done a magnificent job and have had the courage and initiative to depart from the Botanical and Zoological codes where it has appeared useful to do so. The resulting Bacteriological Code—although differing in certain respects, such as the definition of subgeneric taxa—has retained very many features of the Botanical and Zoological codes, and the three codes form a closely knit group.

The Bacteriological Code is described in four chapters devoted to general considerations, principles, rules and recommendations, and provisions for modification and amendment. Of these, the third chapter is by far the largest and consists of the rules of nomenclature, together with illustrative examples of their application and notations of their resemblances or differences from the corresponding rules in the Botanical and Zoological codes. The fourth chapter, although a part of the code, is a kind of constitution and by-laws for the International Committee on Bacteriological Nomenclature and its subgroups—a judicial commission and various taxonomic subcommittees. There is also an appendix, which includes a summary of usage in the transliteration of Greek words, a section on alternative spellings, a summary of opinions issued by the committee, and a list of conserved and rejected names.

The stated aim of the efforts of the committee is to provide a fixity of legitimate names, putting the nomenclature of the past in order and also providing a nomenclature for the future. Present nomenclature of bacteria—that inherited from the past—is unquestionably in a less than perfect state, having been derived by application of both botanical and zoological systems and seasoned with personal inspirations. At the same time its reformation results in a certain amount of trauma—that caused by a seeming fluidity, such as the shifting of the glanders bacillus from *Actinobacillus* to *Pfeifferella,* to *Malleomyces,* and back to *Actinobacillus,* and that occasioned by the disappearance of an old, well-established name in favor of a quite unknown name because of the discovery of an obscure note published in an obscure journal many years ago. In my opinion, the inclusion of a "grandfather clause" making legitimate current, generally accepted, nomenclature might have some small advantage.

The provision of a nomenclature for the future raises questions which have little or no precedent. It is now clear, for example, that the etiology of diphtheria is dual in nature in that the toxigenic bacillus is lysogenic, and the genetics of the relationship between the bacillus and the bacterial virus is only now being worked out; one wonders what is to become of the entity *Corynebacterium diphtheriae.*

The expressed views of the committee imply that the viruses are to be regarded as bacteria. The semantic aspect is no doubt of small importance, but the problems of nomenclature are immensely complex because they are inevitably taxonomic in nature. A promising start in this direction has already been made, and it may be anticipated that the committee will eventually be able to put this part of the microbiologist's house in order also.

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Man's World of Sound. John R. Pierce and Edward E. David, Jr. Doubleday, Garden City, N.Y., 1958. 287 pp. Illus. $5.

Acoustics may be one of the older and less popular branches of physics, but it has had its share of exciting developments in the past decade or so. In fact, the science of sound is a good example of a new trend—that of bringing man back into the picture. For several centuries the experimental and theoretical studies of sound have paid more attention to its propagation than to its generation and have usually stopped short of the eardrum. This was necessary as long as the physics of sound transmission was not well understood. But with the advent of the vacuum tube, exact measurement became relatively easy, and we are now in a position to study the broader subject of communication from man to man, of which physical acoustics is but a part.

It is in the fields of psychoacoustics, physiology of speech and hearing, and information theory that the most exciting advances have recently been made, not the least surprising development being that these new, nonphysical findings also are quantitative and amenable to mathematical representation. At present it is easier to predict theoretically the decrease in intelligibility of a lecture caused by the passage of a jet plane overhead than it is to predict, theoretically, the properties of a transistor.

Many of these new developments are reported in popular terms for the first time in *Man's World of Sound.* Here the nonspecialist can see how information theory is beginning to unify branches of physics, physiology, and psychology into a scientific study of man's auditory communication to man. The first third of the book deals with the physics of sound; the second third, with the physiology and psychology of speech and hearing. The final third discusses the newer concepts, such as that of intelligibility and information rate and the recent ideas about how speech may be encoded (that is, written down) automatically and how this code can be artificially transformed again into spoken words. The explanations are lucid; there are graphs but no equations.

One might wish that this book could become as popular as Rachel Carson's *The Sea Around Us.* Certainly the subject of oral communication, in its broadest sense, is as important to us as is the ocean; indeed, in the long run it may be as important as the subject of nuclear fission. But I doubt that *Man's World of Sound* will achieve this sort of popularity, for several reasons. For one thing, the book is somewhat spotty; chapters of clear and interestingly written exposition contrast with pages rather loaded with definitions and bald facts. For another, the authors have avoided those pseudo-philosophical disquisitions on the inner meaning of things which so impress the more influential literary critics. It is also true that sound and speech are a little too commonplace to arouse a sense of wonder without resort to histrionics, which the authors have eschewed.

But these are minor faults (if they are faults at all). They should not deter the nonspecialist reader from learning about new and interesting developments in this important field of science and technology.

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The Scope of Physical Anthropology and Its Place in Academic Studies. A symposium held at the Ciba Foundation, 6 Nov. 1957. D. F. Roberts and J. S. Weiner, Eds. Published for the Society for the Study of Human Biology by the Wenner-Gren Foundation for Anthropological Research, New York, 1958. 66 pp.

The expansion of the scope and the widened interests of physical anthropology are succinctly and shrewdly discussed in this little symposium volume. The Ciba Foundation gathered together ten of Britain's foremost students of human evolution (Le Gros Clark, Penrose, Stevenson, Young, Mourant, Barnicot, J. S. Weiner, Oakley, Tanner, and Zuckerman), who have outlined their conception of the research and teaching obligations of the science. The diversity of research interests examined range from