of dues ($9.00 without journals[6]), which are higher than average. The relatively large membership in the societies representing the various branches of zoology is accounted for in part by low dues (average about $3.00) and the fact that there is undoubtedly a large amount of overlapping membership.

The starring of chemists in "American Men of Science" is wholly out of line with the data which have been presented. The numbers of the various scientists first starred in "American Men of Science" in the seventh edition, as well as earlier editions, are as follows[7]: chemists 44; physicists 37; zoologists 37; geologists 27; botanists 25; mathematicians 21; pathologists 15; astronomers 13; psychologists 13; physiologists 11; anatomists 7; anthropologists 5. If we accept the other numbers (taken as a group) as a standard, the number of chemists who should have been starred (leaving out of consideration past deficiencies) is about 58 if the total listing in "American Men of Science" is used as a basis or about 295 if the National Roster figures are used. Possibly an intermediate figure of 106 based upon doctorate degrees in 1941 and 1942 would be more nearly fair.

From these facts one may conclude that chemists have not been good salesmen or advertisers. The matter of starring is but one aspect of the larger problem of improving the status of chemistry. It is hoped that before the eighth edition of "American Men of Science" is published, this problem, including that of accumulated deficiencies, will be considered fully.

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MOLD PREVENTIVE FOR BOOK BINDINGS

IN warm climates following a protracted rainy spell, it is not uncommon to find one's book bindings supporting a heavy growth of mold, which if unchecked will disfigure the books. Mere dusting removes the superficial growth without disturbing the mold actually growing in the paste of the bindings.

Several years ago, following a wet season, the Duke Hospital Library had an epidemic of mold in two stacks of bound journals which stood near an underground ventilator drawing air from an open areaway. The author was called upon for suggestions to remedy the situation. The vent was closed and the following solution was wiped over the molded bindings:

Thymol crystals	10 grams
Mercuric bichloride	4 grams
Ether	200 cc
Benzene	400 cc

The treated volumes have never shown any tendency to mold since and any other outbreaks of mold have been similarly and effectively treated. The solution is poisonous and inflammable and should be used carefully in an open room or outdoors with no source of fire near by. It is best applied with a cotton sponge tied to a suitable applicator or held by forceps, so that none of it gets upon the fingers. The solution penetrates the bindings readily and dries rapidly, leaving no precipitate. One application is usually sufficient and the books may be returned at once to their places. It is wise to test first one corner of the binding before using the solution to discover whether the dye may run or change in any way. In our experience it has not altered the appearance of the goods nor affected the letter stampings.

The solution may, as well, be safely used on record album backs, leather boxes and luggage, but it should *never* be used on any wearing apparel.

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FANCIFUL PORTRAITS OF ANCIENT MATHEMATICIANS

IN his "Works of Archimedes" (1897) T. L. Heath (1861–1940) remarked in the preface: "I have had one disappointment in preparing this book for the press. I was particularly anxious to place on or opposite the title-page a portrait of Archimedes." He then added that he was reluctantly obliged to abandon this plan because he could not find a reliable portrait of Archimedes after a careful search. He evidently thought it was better not to include any portrait of Archimedes than to insert a fictitious one. On the contrary, a considerable number of our mathematical text-books include fictitious portraits. Even Volume I of D. E. Smith's "History of Mathematics," which is widely used in our schools, includes such portraits.

In his review of this volume, published in *Isis*, Volume 6, page 443 (1924), George Sarton remarked: "The inclusion of fanciful portraits (for example, of Plato and Fibonacci) seems to me a serious mistake for which I can find no justification." Fortunately, the second volume of D. E. Smith's "History of Mathematics" does not contain such portraits, but they were then still widely advertised as suitable for the walls of mathematical classrooms, where they naturally mislead many students as regards the history of our subject unless it is plainly noted that they are unreliable. Even then they are frequently misunderstood.

As definite evidence of the existence of such portraits in influential mathematical text-books we may refer to the revised edition of the plane geometry by Slaught and Lennes (1918). We find here such portraits of Plato, opposite the title-page; Euclid, opposite page 66; Pythagoras, opposite page 236; and

[6] These dues have since been lowered to $7.50, but this did not affect the 1942 data.

[7] J. Cattell, SCIENCE, 100: 126, 1944.

Archimedes, opposite page 272. In none of these cases is it stated that these portraits are fanciful. It is true that historical material, including portraits of mathematicians, is usually of secondary importance in a mathematical text-book and may be omitted entirely, but when it does appear therein it should be reliable in order to inspire the student with due confidence and cultivate high ideals as regards truth.

Fanciful portraits of the same mathematician may naturally differ very widely, and this wide difference sometimes discloses nothing in regard to the known characteristics of the individual concerned. According to the *Bulletin of the American Mathematical Society,* Volume 40, page 189 (1934), under the heading "International Mathematical Congress Medals," an international committee was appointed to decide on awards to be made at the Oslo Congress (1936). The task of designing a suitable medal was entrusted to a Canadian sculptor who completed a medal showing a fanciful head of Archimedes, one of the greatest mathematicians of antiquity.

Since it was then well known that no reliable portrait of Archimedes was extant recourse was had to a collection of over thirty fictitious portraits then owned by D. E. Smith (1860–1944) and placed by him in the library of Columbia University. These show the views of many different artists and differ widely from each other. This procedure may be of interest to some who do not believe that the results obtained thereby have much scientific value. It is also of interest because it was used by such a large body of mathematicians, including some of the most noted at that time, and hence may appear to exhibit a widespread indifference as regards mathematical history.

The appearance of a considerable number of fanciful portraits in our elementary mathematical text-books is an element of the American history of mathematics which seems to have as yet received little attention. In fact, the history of the development of mathematics in our country has as yet received little attention. Important beginnings along this line were made by F. Cajori's work entitled "The Teaching and History of Mathematics in the United States" (1890) and by the small volume due to D. E. Smith and Jekuthiel Ginsburg, entitled "A History of Mathematics in America Before 1900." The former was published by the U. S. Bureau of Education and the latter by the Mathematical Association of America in 1934.

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SCIENTIFIC BOOKS

RADIO'S MEN OF SCIENCE

Radio's 100 Men of Science. By ORRIN E. DUNLAP, JR. New York: Harper and Brothers. 1944. $3.50.

To paint word portraits of the hundred men who have contributed most to radio is indeed no small task, but the author has succeeded in producing a profoundly interesting story and, within the limits dictated by space, he has given as full an account of the achievements and personalities concerned as could reasonably be expected. The result is a book which is full of interest from beginning to end.

Naturally, when one spreads the development of radio over a hundred individuals, there is likely to be ample room for divergence of opinion as to the appropriate choices which have been made. This is more particularly the case since many of the individuals named have paid their contribution, not to radio directly, but rather to some piece of apparatus or device which ultimately found its use in that field, but which was not invented with wireless primarily in mind. In those fields which pertain more particularly to radio itself, one might question the omission of certain names having to do primarily with measurements of the Kennelly-Heavisidean Layer and of the complex nature of the layer.

It would be out of place to make too much of minor points of technical criticism, but the elementary student of physics is so frequently castigated for failing to realize that Ohm's Law implies merely a proportionality between voltage and current, that one is rather concerned to find the sin for which he is so castigated supported in the citation of Ohm's Law given on page 34, to the effect that "A current flowing in any closed circuit is proportional to the force or voltage and inversely proportional to the resistance of the wire."

The author is to be congratulated upon having accomplished a very worth-while task and on having produced a book which is not only informative, but one which should serve as an inspiration to many young people whose ambitions urge them to simulate the outstanding inventors of the science of radio.

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ELECTRICAL COMMUNICATION

Electric Circuits and Fields. By HAROLD PENDER and S. REID WARREN, JR. 509 pp. Illustrated. 8½ by 5¼ inches. New York: McGraw-Hill Book Company. First edition. 1943. Cloth, $4.00.

THE rapid development of electrical communication