

to my attention is the paper by Bessie Goldstein in the *Torrey Bulletin*, in which she shows that the reports of the occurrence of binucleated cells by Hutchinson and by Beer and Arber were due to the observation of cells with cell-plates in polar view.

A limited number of high-class criticisms written for the sole purpose of criticizing are undoubtedly beneficial. This applies especially to books and papers accepted for publication by non-scientific editors. But I for one do not feel the need of further burdening our already over-taxed publication facilities with fault and flaw finding Philippias which add nothing to the sum total of human knowledge. *Botanical Abstracts* supplies us with satisfactory reviews of all papers. Is it not well that *ex cathedra* critical effusions are giving place to the reinvestigation of critical problems?

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EVOLUTION AND THE BIBLE

UNDER the above caption, Dr. Ira D. Cardiff, in *SCIENCE* of July 31, very properly points out that many of those who are coming forward to the defense of evolution are not scientists of any standing. Probably some of those defending the Biblical account of creation are not scholars of any standing. Debates will undoubtedly frequently be held by people of little or no training in either of the fields that they are discussing. Votes taken by audiences listening to such debates are nothing more than expressions of opinion on the efficiency of the individual debaters, but that is true of debates on practically all subjects, and there is in it no serious danger either for science or religion.

It is quite as foolish for a specialist in religion to attempt to criticize and to analyze scientific subjects with which he is not familiar as it is for a scientist to attempt to criticize and analyze religion or the Bible unless he is thoroughly familiar with the subject.

Many scientific men of good standing in their specialties are quite ignorant of closely related scientific fields, and grossly ignorant of the history and philosophy of religion. There are many others, however, who while they have become great specialists have also given as careful study to other unrelated fields. I happen to know quite a number of the scientists of high station referred to by Cardiff as having done harm to science by their statement that there is no conflict between science and religion, meaning presumably the Christian religion in its broadest sense. I think it may be fairly said that their statement represents the conviction of a very large number if not the majority of scientific men with whom in the past

thirty years I have had occasion to discuss this subject. There can be no conflict between truths in the two fields. No scientist will refuse to recognize truth wherever he finds it. I am glad the "scientists of high station" had the "moral courage" to make the statement they did.

Mr. Cardiff is doing the real harm to science by taking an unscientific attitude toward religion.

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I can not help thinking that Dr. Ira D. Cardiff, in his letter (*SCIENCE*, July 31, p. 111) on "Evolution and the Bible," is really quite off on the wrong track.

The first chapter of Genesis is not in the least "primitive Jewish folk lore"—though most of the second chapter pretty certainly is. But that "Elohism" first chapter, in its present form, is probably nearly as late as Aristotle's day, and, on the whole, fair Mediterranean science of its time. The weakness of the fundamentalist argument is that it reads into this by no means absurd account of creation various ideas that are not there at all. The way, then, to meet his demand that we shall "take the Bible literally" is to take him at his word and do precisely that. Do this—with a good dictionary—and it immediately appears, that although, naturally, Genesis I does not support "Darwinism," neither does it any more support the "Linnaeanism" which the anti-evolutionists read into it.

I do not happen to know how skillfully this Mr. Cantrell may have handled his case before an audience; but I do think he is pursuing a sound strategy. After all, the Bible does not support fundamentalism. Therefore, the way to beat the fundamentalist is to get him to read the Bible—which he rarely does, being too busy hunting up proof-texts.

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SCIENTIFIC BOOKS

History of the Beet (Beta) as a cultural Plant (Geschichte der Rübe (Beta) als Kulturpflanze) from the oldest times until the publication of Achard's principal work (1809). An anniversary essay, in honor of the 75th year of the foundation of the "Verein der Deutschen Zuckerindustrie." By PROFESSOR DR. EDMUND O. VON LIPPMANN, Hon. Dr. Eng., Technical High School of Dresden and Director of the Halle Sugar Refinery in Halle, Germany. One illustration, 184 pages, 16 × 23½ cm. price bound 12 gold marks. Julius Springer, Berlin, 1925.

THE present volume is the third quatercentennial essay which has been issued by the "German Indus-

trial Sugar Association" since its establishment in 1850. The first publication of this nature upon the "Origins of Beet Sugar Manufacture" was written by C. Scheibler in 1875; the second upon the "Development of the Beet Sugar Industry from 1850 to 1900" was written in 1900 by the author of the present memorial upon the "History of the Beet as a Cultural Plant." Professor Lippmann mentions in his preface that this new work is the ultimate result of an effort to bring the fragmentary sketch of the sugar beet, which he had prepared in 1890 for his well-known "History of Sugar," to a greater state of accuracy and completion.

As in his previous scientific, technical and historical writings, Professor Lippmann has condensed into this new treatise a vast amount of learning and research. He informs us that the earliest known reference to the beet is contained in an old Babylonian catalog of the plants that were cultivated in the gardens of King Merodachbaladan, who reigned from 722 to 711 B. C., in which record it appears under the name *Silqa*. This word, as well as the Syrian *selka*, and the Greek *σικελός* employed by Theophrastos, indicate Sicily as probably the place where the wild *Beta maritima*, which grows on the shores of the Mediterranean, was first cultivated. From the time of its early domestication in Sicily before 1000 B. C. the author traces the history of the beet first in ancient Greece, Italy and the other Mediterranean nations and then down through the successive centuries of the middle ages until 1809, when Achard published the results of his classical experiments (1786-1809) which placed the manufacture of beet sugar upon its earliest successful basis.

The perplexing question of the botanical origin of the beet is critically discussed in a special chapter. Owing to the fact that early writers frequently gave the name of beet to other root crops, such as turnips, radishes, parsnips, carrots, etc., the greatest confusion of nomenclature has prevailed and much caution must be exercised in interpreting the ancient records.

This new volume is another evidence of the many-sided ability of Professor Lippmann as chemist, technologist and author. It is a most interesting repository of botanical, agricultural and historical information. Curious bits of folk-lore, literary citations and entertaining episodes are interwoven with descriptions of the uses of the beet as a vegetable, a cattle food, a medicine and a crop for the manufacture of sugar. The copious footnote references to original sources of information as well as the excellent indices of authors, names and subject-matter make the book invaluable to those who wish to delve deeper into the subject.

The book is splendidly printed in clear Roman type and is very free from typographical errors, only one slight misprint (parenips for parsnips on p. 98) coming to the reviewer's attention. The single illustration in the volume is of particular historic interest, as it reproduces a drawing of the root, leaves and stalk of the beet contained in the Vienna manuscript of the "Materia Medica" of Dioscorides written about 500 A. D.

Professor Lippmann's new treatise is one which will appeal to all botanists, agriculturists and ecologists. It is also heartily recommended to every student of the history of science.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS MOUNTING AND EXHIBITING RELIEF MODELS

THE writer has recently completed a large relief model of the Bloomington, Indiana, Quadrangle. The model is mounted on a tripod of suitable height. The legs of the tripod are equipped with glides so that the model can be moved easily to any desired position on the floor. To the top of the tripod a large strap hinge is bolted and the model is securely bolted to the movable part of the hinge.

The model is so nearly balanced on the hinge that it can easily be tilted and securely fastened at any angle by means of a chain and hook on the back of the model frame. When not in use the model rests in a nearly vertical position, being supported by the hinge and resting against the legs of the tripod to which it can be fastened by hooks for additional security.

This method of mounting models that are too large to be easily moved by hand is especially convenient for class-room instruction since it makes an easily manageable model that can be viewed from any angle by members of the class. This free movement of the model would not be possible if it were fastened to a wall or immovably fixed on a frame.

The writer believes this method of mounting may be of interest to others who have occasion to mount or use illustrative material of this sort.

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A DUPLEX VACUUM GAUGE

It is evident from the sketch that readings are made by tipping the gauge through an angle of 45 degrees either side of the center line.