evolution involving a time element." I used the term "major phylum" to indicate which of these two usages I had in mind. It is a pity, however, that zoologists could not adopt more generally the term "branch," equally good and not equivocal in its meaning.

I have no intention of engaging in a dialectic discussion with Dr. Clark. Any one who is interested can take his article, my criticism and his reply, and judge for himself. Nor will I undertake to accept his instructions as to what I ought to do in order to render service to science. That I must judge for myself. I have spent a good part of the last thirty-odd years in trying to condense scientific facts and conclusions into more or less popular form without being any more vague or misleading than I can help. It is the most difficult kind of scientific writing, and Dr. Clark, somewhat of a newcomer in this field, must not take it amiss if he meets with rather severe critical standards. Their necessity is illustrated by the press treatment of his "new" theories.

W. D. MATTHEW

COURSES IN ASTRONOMY IN SOUTH AFRICA

IN the issue of SCIENCE for March 29, 1929, there is a note regarding the establishment of courses in astronomy at the Grey University College at Bloemfontein which states that these courses are the first to be established in the Union of South Africa. Courses in astronomy were first offered at the University of the Witwatersrand in Johannesburg in 1926. The Union astronomer, Mr. H. E. Wood, is in charge of these courses. Furthermore, at its last graduation ceremony on March 23, 1929, the University of the Witwatersrand conferred the degree of master of science upon a candidate in the department of mathematics whose thesis, done largely under the direction of the writer, discussed an astronomical problem arising in connection with his work as a volunteer assistant at this station.

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QUOTATIONS

SCIENCE IN AFRICA

YESTERDAY afternoon in the City Hall at Cape Town, and in the presence not only of the Governor-General and a brilliant company representing official, scientific and social South Africa, but of many of the leaders of British science, the British Association for the Advancement of Science held the inaugural meeting of its sessions for 1929. When the association was founded, nearly a century ago, little more was contemplated than an annual assemblage of British men of science, with possibly a few foreign guests, who should discuss problems of common interest and make known to the wider public the more recent achievements and the immediate aspirations of science. The new institution rapidly conquered public respect as an organ of utility to science itself and to the nation. But it remained British in the narrower sense for many years, although in the meantime the world, as measured by hours of travel, was contracting, and science was becoming ever more conscious of its international solidarity. Within the British Empire professors and students were being exchanged, and it was becoming plain that it was a duty and a gain to encourage cooperation among those working at research in the outposts of Empire. In a special degree it was felt that it would encourage such scientific teachers and investigators as were missionaries rather than natural products of their environment, if it were shown that they had the respect and sympathy of the colleagues who remained in the relative security of the old country. Accordingly in 1884 the British Association, not without opposition, took the great step of holding an annual meeting in Montreal. It proved a success, and in 1897 it was followed by a still more successful meeting at Toronto. The principle was thus established; and there followed meetings in South Africa in 1905, in Winnipeg in 1909, in Australia in 1914, in Toronto again in 1924, and now in South Africa in 1929. The Prince of Wales, president at the Oxford meeting in 1926, and himself an extremely competent witness to opinion in the oversea dominions, has assured us of the advantage to science of personal communion among men of science in all parts of the Empire. But the advantage is not merely to science and to material progress—although there is overwhelming evidence that visits of the British Association on the one hand have encouraged local endeavor, and, on the other, have awakened the visitors to a new sense of their duties and opportunities as citizens of a great empire. The trend of political development is definitely towards a distinctive, almost a separative, organization in each of the great Dominions. The greater is the reason for the encouragement of unifying factors, among which there is none greater than the pursuit of knowledge. Whatsoever may be the local needs and the local opportunities which tend to specialize the applications of science, the principles which underlie the effort to increase knowledge for human benefit are the same. All the indications suggest that the meeting in South Africa will be one of the most successful in the long history of the association, successful in the stimulus the visitors will give, and successful in the stimulus they will receive.

By a happy innovation the opening address was delivered by the president of the South African Association. Mr. Jan Hofmeyr, speaking in the City Hall after the association had been welcomed and Sir Thomas Holland, the new president, had been installed, made good use of his opportunity. He had many advantages. He comes of distinguished South African parentage, and as one of the earlier Rhodes scholars he has experience of the distinctive culture of an English university. He is a young man, still under forty, who has grown up during the efflorescence of science and university life which he attributed in some measure to the stimulus of the first visit of the British Association to South Africa in 1905. As head of the Witwatersrand University at Johannesburg he has had experience in the organization of a new teaching institution adapted specially to the needs of a new country. As administrator of the Transvaal he has seen the need of applying science to the practical problems of life. The fact that he is not himself a worker in science has enabled him to take a broad view, realizing the need of the advancement of knowledge for its own sake as well as for its applications to the material benefit of mankind. He had a remarkable story to tell yesterday of the progress of science in South Africa during the last quarter of a century. In 1905 there was only one university with thirty-three professors scattered over seven different institutions, and in that year only twenty-seven students qualified for degrees in science. Now there are three single-college teaching universities and a federal university with six constituent colleges. All are well equipped, and there are 134 professors and 295 others teaching the various branches of sciences. In 1928 no fewer than 275 students graduated in the various branches of science. The two observatories of 1905 have been increased to six. The Civil Service has established one of the finest stations in the world for Veterinary Research. The government and the mining industries have established and maintained an institute for medical research, the number of scientific societies has increased very greatly, and in the opinion of Mr. Hofmeyr there is now in South Africa a pride in science and a belief in its power. The record is gratifying to South African patriotism, to the British Empire generally, and to all who are interested in the advance of civilization.

Mr. Hofmeyr, possibly out of his experience as a successful publicist, used the intriguing phrases that the chief character of the progress of science in South Africa during the last quarter of a century had been its "South Africanization," and that the note of the future should be the "Africanization of science in South Africa." Even if the phrases be stripped of their patriotic coloring they retain a valuable plain meaning. Science, or any other branch of learning, is in an unhealthy state in any country in which it remains an exotic. Its principles, no doubt, are international, but, if they are to be taught effectively and exercised productively, they must receive their inspiration from a local environment and be attuned to local needs. Take botany or geology, engineering or astronomy, and it will be found that the local examples explain the principles most suitably and that the local conditions give the best stimulus to discovery. In this sense, as Mr. Hofmeyr showed, science has become "South Africanized." The seeds brought from Europe have taken root in a new soil, have produced luxuriant foliage and blossoms and fruits different in flavor from those of the original plant. Possibly Mr. Hofmeyr went farther than all his audience would be ready to follow in suggesting that the next stage should be the "Africanization" of what has now been "South Africanized." There are other "portals of entry," even south of the Equator, than those of South Africa, and from the north and by the west and the east science and civilization are creeping into the dark continent. But Africa has problems to solve and discoveries to yield more than sufficient for all the scientific enterprise that can reach it. There is no Monroe doctrine in science, and it is a gain and inspiration to the whole world that South Africa, having accomplished so much, should be ready and anxious to undertake so much more.—*The London Times.*

SCIENTIFIC BOOKS

Johannes Kepler, Neue Astronomie, überstezt und eingeleitet von MAX CASPAR, mit XIII und 68 Figuren. Verlag R. Oldenbourg, München-Berlin, 1929. Pp. 1*–66*, 1–416. In Leinen geb. M. 38.50; Büttenausgabe in Interimsband M. 52, in Schweinsled. geb. M. 100.

THE book under review is the first complete edition in a modern language of Kepler's "Astronomia nova," 1609. Brought out in one large volume, the printed page measuring 15 x 22 cm and appearing in large size Latin type, the present publication constitutes a fine exhibition of book manufacture. We deplore, however, the absence of a good alphabetical index.

Kepler's writings possess unusual charm. He permits the reader to share not only his scientific findings, but also his feelings, his hopes, his disap-