

pean civilization. And he should choose his point of observation above the level of national rivalries. Nicholas Copernicus, whether he was born of Polish or German parents or came from a mixed marriage, is just as little the exclusive property of Poles or Germans as his contemporary Erasmus (with whom he has more than one trait in common) can be claimed only by the Dutch, because of the mere fact that he was born in Rotterdam. Each in his own way was a citizen of the world and belongs to the whole of mankind.

WHEN Copernicus had attended to all his manifold tasks as a cathedral canon, he quietly returned to the tower of his Curia in Frauenburg and continued his observations of the sky. He supplemented and checked his results by reading carefully in the original certain classic authors such as some members of the Pythagorean school who had been aware of the possibility that the earth might be moving. Gradually what had only dawned on him became his firm conviction when he was a pupil of the ingenious astronomer Domenico Maria Novara in Bologna: that not the earth but the sun was the center of the universe and that therefore the whole theory of Ptolemy of Alexandria was to be discarded. In its place Copernicus developed, step by step, his own heliocentric system which became the foundation of modern astronomy.

For more than thirty years he kept his discovery from the general public. Probably he feared to become involved in a fight that might threaten his position within the Church, of which he was a faithful servant, though never a zealot. After all, the Counter-Reformation was just then raising its ugly head. If it had not been for the strong encouragement by some friends, Copernicus's great work "*De revolutionibus orbium coelestium libri six*" might never have seen the light of day.

It is somewhat amusing to see that we owe the publication of "*De revolutionibus*" largely to George Joachim Rheticus, a young professor of mathematics in Wittenberg, the citadel of Protestantism. Rheticus spent two glorious years as a pupil of the aging canon. He published an outline of "*De revolutionibus*" in the form of a letter to a former teacher ("*Narratio prima*"); it contained also some interesting sidelights on his new master of whom he had grown very fond. His youthful enthusiasm finally overcame Copernicus's resistance. At long last, he gave permission to print "*De revolutionibus*," but not without having inserted a dedication to Pope Paul III—a strategical consideration.

Unfortunately, the work appeared in an adulterated form. Andreas Osiander, a Protestant theologian in Nuremberg, who was to read the proofs of "*De revolutionibus*," wanted to be especially cautious and added an unsigned preface in which he told the reader that the whole book contained only hypotheses, not certainties! Copernicus did not realize the fraud that had been committed there when he received the first copy on his deathbed (May 24, 1543). He was able to handle the book, but his eyes could no longer grasp the contents. Its arrival at this moment was symbolic; thus in a very special way, said his biographer Prowe, the end of Copernicus's life meant the beginning of his immortality.

"**IMMORTALITY**" is a big word. There is no famous scientist of past centuries whose discoveries would not seem outmoded to the expert of today, at least in some respects. Copernicus did not escape this fate. His heliocentric law of planetary motions was certainly the greatest single step forward in the whole history of astronomy, but he did not solve all the riddles of the universe by his new system. Kepler, Galileo, and Newton were needed for erecting the final structure on the foundation which he had laid. Each of them clarified, expanded, and corrected certain ideas of "the sage of Frauenburg," but his merit remains forever to have made

possible the break-through of modern scientific thought. His place in the history of civilization is with Columbus, Erasmus, and Luther.

The personality of Copernicus appeals to the man of the twentieth century for various reasons. We admire the catholicity of his interests. He was equally at home in all branches of knowledge of his age, was churchman and statesman, astronomer and physician in one person. And we respect his perseverance in search of scientific truth. For more than thirty years he continued quietly his observations with unending patience in order to exclude the slightest possibility of error. Few other men of learning would have shown such reticence and spirit of humility. Finally, we salute Nicholas Copernicus because this Renaissance scholar stood for the same ideals for which the best among us are striving today. He is a symbol of that *universitas literarum* in which there is no place for national or denominational jealousies. Professor Stephen P. Mizwa, the Secretary of the Copernican Quadricentennial National Committee, has expressed this line of thought very appropriately: "In paying tribute to Copernicus of four hundred years ago, the scientific world of today reaffirms its own faith in the dignity of free scientific inquiry."

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Educational Equations of the Future

SLAVES NEED NO LEADERS. By Walter M. Kotschnig. New York: Oxford University Press. 1943. 284 pp. xv. \$2.75.

Reviewed by ORDWAY TEAD

WHAT kind of education contributed to the rise of totalitarianism? What kind of education helps to maintain it? What kind of education can be an antidote for it?

These are urgent questions both for citizens and for educators; and they are here considered by a scholar who has an ample comparative background out of which to proffer helpful conclusions. The study is primarily centered on the European educational scene and at the center of the problem faced is the prickly matter of the re-education of the German teacher about which some exceedingly pertinent suggestions are offered. Parallel with it in magnitude is the reorienting of the German students who have been so successfully indoctrinated by the Hitler regime. "The success or failure of

the new peace settlement . . . will depend on the success or failure of the re-education of Germany."

A final chapter treats of post-war education in Britain and America, and the attention is focussed on how international understanding is to be strengthened through the processes of public school education. This discussion is divided as between the immediate reconstruction measures and the more long-time policies to be employed.

This book does what it sets out to do. It calls America's attention to the educational aspects of the problem of international comity—to the burden which education must assume for building undivided minds and hearts attuned to moving happily and competently in a global world.

It does not minimize the difficulties. It does not pretend to supply all the answers. But it is a needed reminder by a man of goodwill and a citizen of the world that, if we are to live responsibly in a supernational world, the citizens of the constituent countries have to be possessed of a supernational knowledge and outlook.

Continental Stepping Stone to Victory

AFRICA: Facts and Forecasts. By Albert Q. Maisel. New York: Duell, Sloan & Pearce. 1943. 307 pp. \$2.75.

Reviewed by RAOUL AGLION

THIS timely book is divided into three parts of unequal length.

The first one deals with the war and the importance of the Dark Continent in the German and Allied war strategy; the second, purely political, deals with the Atlantic Charter and the record of the white men in Africa; the third is descriptive: it surveys each of the forty-eight segments of the continent which are divided among the French, English, Spanish, British, Portuguese, and the very few remaining independent countries such as Egypt, Ethiopia, and Liberia.

There is a French proverb that says "Colonies are won in Africa, but lost on European battlefields." Such a statement is, indeed, true. France lost India and Canada after the disastrous wars waged by Louis XIV; Reunion Island as well as other colonies were lost at Waterloo; the Germans, who succeeded in conquering Tanganyika, Togoland, and Cameroon, lost them at the Versailles Treaty. It can furthermore be said that, should the Germans have succeeded in winning the present war, it would have meant for France the loss of her African Empire. As far as Italy is concerned, there is no doubt that she will, in this war, lose her so-called Abyssinian Empire.

Strange as it may seem, only gigantic wars have been fought in Africa. Usually, wars between two European countries never went so far. Africa has been a big battlefield for Romans, Carthaginians, and the soldiers of Mohamet. Napoleon fought in Egypt. Since that time, wars have not been fought in Africa but in Europe. Africa is at the periphery of Europe; the position of this high plateau reaching from Spain to the Balkans makes it an obvious springboard for all fighters.

Few people have been interested in Africa. Americans know more about China, the Far East, Australia, and of course Europe, than about the Black Continent.

Africa can be geographically divided into two large sections. The North is the home of Semitic and Hamitic races which settled there thousands of years ago, and in the large territory south of the Sahara the Negro population is found.

Very few European countries have succeeded in establishing mass white settlements in Africa. The French have done so in Algeria and the Brit-

ish have done so in South Africa.

A large part of the book is devoted to Black Africa. How has the native population been conquered? Unfortunately, it is to be confessed that not everything has been done to help the natives to build up a civilization of their own. Sometimes the European powers have tried to wipe out the natives, sometimes they have tried to assimilate them into their own civilization for which they obviously were not made.

Germans were the most ruthless in these slaughters . . . In South West Africa, the first of the German colonies, the Herreros were cattle breeders, a proud and highly developed tribe which numbered some ninety thousand when the Germans first came. German traders, backed as they were by troops, drove harder and harder bargains with these natives in the cattle trade until, at last, the Herreros sprang into revolt in 1904. Systematically and with German thoroughness, the revolt was suppressed.

From that time on the racial principles, which the Germans were to apply later against the European populations conquered by them, were already decided upon.

The English and French administrations have tried, during the last few years, to develop their colonies: schools have been started in Africa, medical assistance for the natives has become increasingly well organized there since the last war.

Large sections, in central Africa—which are in the tropics—have a very unhealthy climate, and a considerable amount of work is still to be done with a view toward wiping out disease and malnutrition existing in these

regions. The necessary staff will have to be augmented after the war, to prevent lowering the standard of sanitation and to set up dispensaries and other means of help all over the continent. Up to now, religious missions of different creeds have been working hard, but the results obtained are quite insufficient.

It should be one of the aims of the United Nations to create normal living conditions for the natives. Concerning the help the Negroes can themselves give to ameliorate their situation, we read:

Some years ago, there were many who maintained that the African natives could not, for generations at least, reach an educational status that would serve as a base for widespread medical education. "White doctors," these people said, "must always form the body of the African medical services." But to achieve the same proportion of doctors to patients maintained in the United States, Tanganyika would need from five to six thousand physicians. It actually had thirty-nine full-fledged European doctors. Similar conditions obtain elsewhere.

The United Nations should work out plans for moral as well as physical assistance in Africa. It has been said that there will be no lasting peace if the nations in Europe do not recover their full independence and obtain normal standards of living. Africa, one of the largest continents of the world, should also share in a large part of the progress of humanity. Should it not be so, discontent will flare up, and riots will develop, which may end in a war in which, again, Europe and America may be involved.

The book of Mr. Maisel will prove most useful for all those who are interested in the African question, and for all scholars preparing post-war plans.



—British Official Photo

This scene from "Desert Victory" shows men of the British 8th Army digging in while their big guns blasted the enemy out of their positions.