

is most hurried. Although there is none of the overtone or undertone of Conrad's *Heart of Darkness*, to the memory of whose author Gide dedicates his book, one finishes *Travels in the Congo* with the sense of having experienced an adventure through Belgian and French equatorial Africa.

JOHN CHAMBERLAIN

THE NATURE OF THE PHYSICAL WORLD by A. S. Eddington (MACMILLAN. \$3.75)

MOST books about the "new physics" have failed for the man-in-the-street or even the man-in-the-study (who is not a physicist) from two mighty defects. First, obscurity of presentation; second, pseudo-finality in philosophical conclusion. Most discussions of the atom have suffered as popular treatises from the former defect; most of the tabloid Einstein literature from the latter. To write a popular book on the revolution in microscopy and astronomy and not to touch on their implications for the beliefs and practices of mankind is perhaps an unnecessary intellectual abstinence. But to write down philosophical conclusions as mathematical deductions is worse. It seems to the reviewer that Professor Eddington in these Gifford lectures, now published in book form in America and England, has deftly avoided both extremes. The book will become, I dare say, the most widely influential, as it is certainly the clearest and most readable, on the subject.

For a dozen chapters the author reviews in a running style, replete with examples—a good part straight from *Alice in Wonderland*—the chief discoveries in astronomy and atomic physics of the past thirty years which have radically altered our conceptions of the material universe. There is the famous Fitzgerald contraction, which teaches us that our reliable friend, the yardstick, may be only eighteen inches long under certain conditions of space and time. There is Einstein's law of

gravitation, scrapping Newton's neat and sensible ones, and thrusting in "curved space" instead. Professor Eddington is careful to point out that this is not scientific metaphysics but a practical rule that predicts eclipses and other highly observable phenomena. We learn in one chapter that time, as conceived by the physics we learned at grade-school, is a relative affair applicable to our planet only; and that space, which we had always imagined to be endless, is actually "finite though unbounded". If you travelled through the ether for a few billion light years in a straight line, you would come back to the same point! It is all very confusing and upsetting, but somehow Professor Eddington, by his skill—and especially by his mixture of modesty and daring—makes us believe and even, at times, vividly imagine his new universe.

One illustration from the chapter entitled "Reality" will give a hint of his temper and his method. He is stressing the essentially abstract and metrical nature of the world of physics. As a matter of fact, his statements if duly grasped, are sufficient to dismantle the "materialism" which was too often a correlative of "orthodox physics". In all their implications they become a fundamental transformation of thought ways for both the engineer and the philosopher. He starts off by giving the physicist's statement of the behavior of certain electrons. Then he sums up: "Something unknown is doing we don't know what—that is what our theory amounts to". Then, "I have read something like it elsewhere—

. . . the slithy toves

Did gyre and gimble in the wabe".

There is the same suggestion of activity. There is the same indefiniteness as to the nature of the activity and of what it is that is acting. And yet from so uncompromising a beginning we really do get somewhere. . . . To contemplate electrons circulating in the atom carries us no further; but by contemplating eight circulating electrons in one

atom and seven circulating electrons in another we begin to realize the difference between oxygen and nitrogen. Eight slithy toves gyre and gimble in the oxygen wabe; seven in nitrogen. . . . Out of the numbers proceeds that harmony of natural law which it is the aim of science to disclose. We can grasp the tune, but not the player. Trinarlo might have been referring to modern physics in the words, "This is the tune of our catch, played by the picture of Nobody".

CHARLES R. WALKER

FRONTIERS OF HOPE by Horace Kallen (LIVERIGHT. \$3.00)

PSYCHOLOGIST, philosopher, historian—yes, and at times a poet—Horace Kallen in this volume examines and appraises the pathfinders on the living European frontiers of his own people. The author of *Zionism and World Politics*, he is preoccupied here with that "organized, secular Jewish nationalism" which is to be found in the new homeland, Palestine; but he looks long at the Jew in Poland, too, and in Russia.

Yet this is not solely a sociological and economic treatise. It is a "travel book" of special distinction, touched at moments with sarcasm and wit, at times with lyric beauty. The picture of Palestine and Televiv, merely as a sensitive tourist's picture, is well worth anybody's while. But Dr. Kallen sees far more than any mere tourist could: he sees the other-worldly aspect which has made the Palestinian enterprise a conflict between realities and Zionist dreams. About these Jews there are a faith and enthusiasm which "transform what would be otherwise a common enough episode in the economies of giving and getting into a consecrated adventure, an act of religion, in which the Jews not alone of Palestine, but of the whole world, have a share". From the first an ardent Zionist, Dr. Kallen's eyes nevertheless are clear as he views the results of the experiment. His people in what was to have been a restored

homeland "have the rights of nationality, and no power except to cry out that their rights are being violated. They have the institutional structure of nationality and no land to build it up on". Upon the prosperous Jewry of the United States must fall the main onus of validating "the integrity of Israel".

Moving on to Poland, Dr. Kallen finds more tragedy than humor in the status of the Jew. The rights of minorities are fully guaranteed in the covenant of the League of Nations, and are blandly or truculently ignored, not only in Poland, but throughout eastern and southeastern Europe. Between Pilsudski and Mussolini Dr. Kallen finds a sinister resemblance. He analyzes the two dictators with penetrating and searing accuracy. Poland has been thrown back into the hands of the aristocrat, and the masses are the underdogs. If hardship be the lot of the poorer Poles, a sort of sustained agony is the fate of the Jews. They are "robots, asking for bread and receiving a prayer; and when have men, even Jews, continued to live by prayer alone?"

To the Russian scene Dr. Kallen devotes much greater space; and the tourist-interpreter and philosopher sees everything, apparently, from the spotted tunic of the dining-car waiter to the injustice by which, under the Soviet régime, some live in squalor in Moscow, while others roll in luxury. No one, perhaps, has written so vividly of that city. Thence Dr. Kallen's journeys across the Ukrainian steppes to Kherson and the Jewish colonies, an area of almost virgin value for American writers. What shall become of these Jews? Trained traders, they must adjust themselves to the Soviet philosophy, Dr. Kallen concludes, by learning to be workers.

Now has the philosopher turned prophet, a witty, balanced and practical prophet. Thus we have here more than a picture of the Jew trying to adapt himself to the new social scene in Europe. We have a record written with clarity, eloquence and beauty.

SILAS BENT