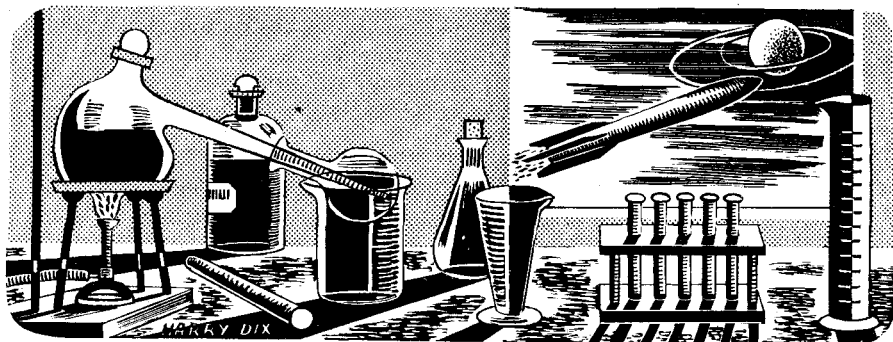


even firemen's newspapers and other periodicals. Membership in a socially acceptable group of volunteer firemen was a social distinction comparable to later membership in one of the exalted circles of New York's cafe and professional society. The suffrage of the fire companies was a ponderable political asset as was evidenced by Boss Tweed's constant awareness of their uses.

Mr. Dunshee's chronicle concerns itself not only with the folklore of fire-fighting, its personalities such as Mose the Fire B'hoy, and Zophar Mills the archetypal fireman and New York's hero of the hose carts comparable to San Francisco's redoubtable David Scannell, but with all the city's landmarks and notables that were coeval with their flowering. It guides our own generation to such landmarks of the city as the Tea Water Pump, Peter Stuyvesant's pear tree, the Chat-ham Square horse fair, the Bunch of Grapes Tavern, and the Oswego Market in Maiden Lane, where Catherine Haven's father had the first water ever piped into a residence in the city.

"As You Pass By" is a rich and rewarding book which cannot fail to delight lovers of New York's vanished glories, a contingent that increases as the metropolis itself becomes less and less amiable.

There are but few faults to find with Dunshee's book. One of them is the dust jacket, a diffused and unsatisfactory clue to the inner contents. The gratifying pattern and nicety of detail in makeup and layout are an admirable complement to its editorial economy. There is none of the untidy extravagance of white paper which grieves the judicious in so many of the current crop of picture histories. Wherever, too, there is a pictorial recreation of a street scene in the old city a map or ground plan on the opposite page identifies the details of the drawing and the scope of the view is indicated by diverging lines which have their origin at the spot where the artist set up his retrospective easel, an imaginative touch which indicates the care with which this volume was designed.



Science. *Since the day of Benjamin Franklin, when all nature was every scientist's province, the pendulum has twice changed its course. By the early 1900's scientists were marking out ever smaller areas of nature as their own and applying themselves to the cultivation of one to the exclusion of all else. Now, at mid-century, the pendulum is well in the opposite direction, as two recent books demonstrate. Harold C. Urey, one of the nation's leading chemists, has made a major contribution to astronomy through "The Planets: Their Origin and Development" (below). V. Gordon Childe, an archeologist, uses the methods and material of his own field to illuminate anthropology and sociology in "Social Evolution" (page 35). This spring, incidentally, is notable for its new books on astronomy. Besides the Urey work there are Helen Wright's "Palomar: World's Largest Telescope" (page 52) and H. A. Rey's "The Stars" and George Gamow's "Creation of the Universe," to be reviewed soon.*

A Slow Solar Burn?

THE PLANETS: *Their Origin and Development.* By Harold C. Urey. New Haven, Conn.: Yale University Press. 245 pp. \$5.

By PETER VAN DE KAMP

THE last few decades have witnessed a revival of interest in the solar system—its origin and development. It is gratifying and significant that this problem so fascinated a distinguished chemist that he felt impelled to add a contribution to those scientific studies made—as a matter of course—by astronomers. In many astronomical problems, such as the high-temperature atmospheres and interiors of stars, chemical properties are unimportant. However, these properties are very important if one wishes to understand the origin of Earth, Moon, and the terrestrial planets, which presumably occurred at temperatures associated with chemical reactions. We can observe the chemical after-effects of the creation of the solar system; with the aid of the facts and theories of all the physical sciences we may inquire into the origin of the planets.

Urey's studies are primarily con-

cerned with the terrestrial planets—Mercury, Venus, Mars, Earth, and Moon. Their chemical and physical properties yield more information about their origin than is the case for the major or giant planets: Jupiter, Saturn, Uranus, and Neptune. After a brief survey of existing theories about the solar system the author presents a physical and chemical study of the Moon and the terrestrial planets. A chapter is devoted to the heat balance of the Earth and another to the chemical composition of the solar system. Current theories about the formation of Sun, stars, and planets from dust and gas clouds have influenced Urey's researches. Starting with an interstellar cloud of gas and dust the Sun, like other stars, was formed at a temperature well below the freezing point of water. In time the interior of the Sun became very hot, and energy production by nuclear reactions commenced. A flattened disk of gas and dust was formed surrounding the sun; this disk broke up; the greater the distance from the sun, the greater the pieces—commonly called planetesimals. The terrestrial planets, as well as the Moon, were formed from an accumulation of small and large planetesimals. In order that the planetesimals might be formed Urey introduces coagulating materials, such as water or snow. The surface features of the Moon were formed comparatively recently through the impact of planetesimals of varying sizes up to 100 kilometers.

The book contains a wealth of in-

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formation and abounds in recent references. It is a sequence of research papers and makes rather difficult reading. It is an advanced research investigation, tentative and modest, a responsible treatise on an exceedingly difficult topic. We can conclude no better than to quote from Mr. Urey's last chapter: "There is a tendency on the part of all investigators to search for a simple explanation of observed facts and to accept such simple explanations rather than more involved ones. This attitude is correct, of course, when applied to statements of fundamental laws, as experience shows. However, phenomena observed in nature which are the result of the operation of these laws are always very complicated, so much so that the details escape the capacity of the human mind. We will never be able to reconstruct the complete course of events which led to the solar system. In this sense this treatise as well as all others is surely incomplete and at most only partly true. And this is a field where judgments in regard to the true and false may require long periods of time. However, the serious student of this subject receives a great reward, for as he must abandon his imperfect hypotheses for others more in accord with the observational data he finds that the new approximation to the ultimate solution is more satisfying than the old."

The Theatre of Cultures

SOCIAL EVOLUTION. By V. Gordon Childe. New York: Henry Schuman. 184 pp. \$3.

By ASHLEY MONTAGU

ANYTHING that Professor Childe writes is bound to be interesting, for he is the most widely informed and the ablest of archeologists. In the present volume Professor Childe sets out to examine the theory of social evolution deduced by Herbert Spencer and Lewis H. Morgan from the comparative study of existing societies. This he does in the light of the findings of archeology, the science which presents societies (no longer existing or not existing in the same form) in a chronologic sequence.

Professor Childe begins by correcting the misapprehension that "evolution" in the phrase "social evolution" is a kind of generalized magic force which does the work of the concrete-individual factors that shape the course of history. Evolution, he points out, does not purport to describe the mechanism of cultural change, nor does it attempt to show why cultures change—that is the subject of history—but the function of social evolutionary theory is to show *how* cultures change. Culture is no mere mechanical

assemblage of traits, it is a living functional way of life which represents the long development of man's attempts to satisfy human needs. But human needs are not fixed quantities; they have changed in the many millennia of man's existence, they have evolved and, indeed, we may regard man's cultures as, at any moment of time, the stage of evolution of the modes of satisfying human needs. As Professor Childe puts it, "A culture is a durable material expression of an adaptation to an environment, human as well as physiographical, that enabled a society to survive and develop. From this point of view the buildings, tools, weapons, ornaments, and other surviving constituents are interrelated as elements in a functioning whole."

Since archeology reveals the chronological order in which cultures have appeared, Professor Childe asks the question whether it is possible from the comparative study of such cultures to deduce certain generalized stages in cultural evolution. Professor Childe's book represents an attempt to answer this question.

Both the student and the general reader will find what Professor Childe has to say informative, illuminating, and stimulating. He will find an excellent critical account of the archeologist's classification of societies, with the emphasis on relative rather than on absolute chronology, on "stages" of industrial development rather than on the erroneous conception of "ages." There is, in fact, no such thing as the Stone Age. There was a Stone Age in England, in Palestine, and in New Zealand, but chronologically, as periods of absolute time, they are all different. With admirable clarity the author discusses the concept of culture as used by the archeologist and anthropologist. Here perhaps the author places too great emphasis on culture as an abstraction. It is true that when we speak of a culture we necessarily have a mental construct in mind; we cannot possibly conceive of a culture in its entirety, and our grasp of it must largely be subjective. In these senses our conception of a culture is necessarily an abstraction, but that is due to our inability to incorporate reality in any other way, and clearly

(Continued on page 52)



"No, no, Rameses! How many times do I have to tell you—horse before cow except after sow!"

Ashley Montagu is chairman of the department of anthropology at Rutgers University. His books include "Introduction to Physical Anthropology" and "Man's Most Dangerous Myth: The Fallacy of Race."