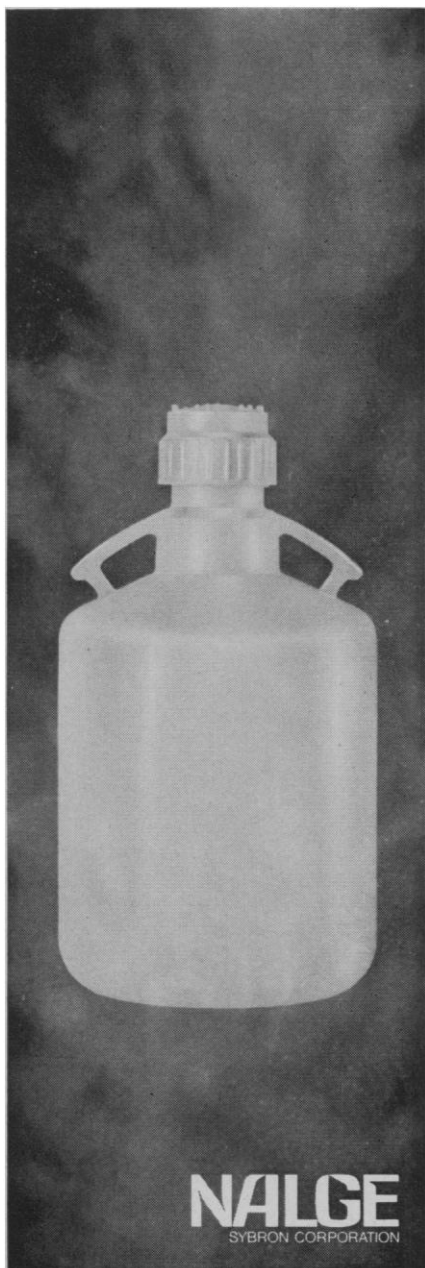


Autoclavable

...the extra dimension

Use the new Nalgene® Carboy to prepare, store, and autoclave 5-gallon batches of culture media, distilled water, and other solutions. This carboy (Cat. No. 2250) is precision molded of heavy-duty polypropylene to withstand repeated autoclaving. Only 2½ pounds light, has screw closure and two carrying handles for maximum safety and convenience.

Specify Nalgene Labware from your lab supply dealer. Ask for our Catalog or write Dept. 21221, Nalgene Labware Division, Rochester, N.Y. 14602.



LETTERS

Structure of an Organism

I would like to question the validity of what I take to be Michael Polanyi's main argument in his article "Life's irreducible structure" (21 June, p. 1308). In his own words, it is this:

1) [An organism's] structure serves as a boundary condition harnessing the physical-chemical processes by which its organs perform their functions.

2) If the structure of living things is a set of boundary conditions, this structure is extraneous to the laws of physics and chemistry which the organism is harnessing.

3) Thus the morphology of living things transcends the laws of physics and chemistry.

Even without further elucidation of Polanyi's conception of an organism's structure as a boundary condition harnessing physical-chemical processes, it is easy to see that this argument is invalid. For, granting the premises, the most that follows is that the morphology of an organism "transcends" those physical-chemical processes which it harnesses. It does not follow that it "transcends" *all* physical-chemical processes. But the latter conclusion is surely what is needed if one is to go on to claim that "both machines and living mechanisms are irreducible to the laws of physics and chemistry."

Probing deeper we see that we may not even have to accept the weaker conclusion, for the second premise of the argument is questionable. Polanyi supports this premise with the following analogy:

In Galileo's experiments on balls rolling down a slope, the angle of the slope was not derived from the laws of mechanics, but was chosen by Galileo. . . . this choice of slopes was extraneous to the laws of mechanics . . .

To take a different, but similar, example, consider the solar system. The positions and momenta of the components at a given time, t , serve as boundary conditions for determining the state of the system at all other times according to the laws of mechanics. Now it is an obvious truth that the boundary conditions at t do not follow from the laws of mechanics alone. But to describe this truth by saying that the structure of the solar system transcends the laws of mechanics is at best misleading, for clearly the boundary conditions at t do follow from the laws of mechanics provided only that we supply some other boundary conditions;

for example, the state of the system at t' . Or, to carry the example somewhat further, it is at least logically possible that the solar system should have been formed from hydrogen atoms by the action of gravitation alone. Thus, while it may be of some interest to think of the universe as a hierarchy of systems, each providing boundary conditions for "lower" systems, it has not been shown that any but physical-chemical laws are needed throughout the hierarchy. It has not even been shown that the *same* laws may not be operative throughout. . . .

RONALD N. GIERE

Department of History and Philosophy
of Science, Indiana University,
Bloomington 47401

UFO Story: Is Propriety the Issue?

In letters recently published here (30 Aug. and 27 Sept.), Condon and Branscomb question the propriety of *Science* reporting on the administrative difficulties surrounding the UFO study that Condon is conducting for the Air Force. Since they raise the question of propriety, I think it is desirable for *Science* readers to be informed of the following concerning the celestial Bay of Pigs that Condon is running in Boulder.

Not long after the publication of a *Look* article attacking Condon for his management of the project, Condon offered to help *Science* prepare a story about the project. It was his hope, he explained, that an article in *Science* would present the situation in a way that would counteract the effects of the *Look* article. As it turned out, independent of the *Look* article or Condon's invitation, the news department was planning a story anyway. Condon assured us of his complete cooperation and did not raise any question of propriety.

When the *Look* article, though critical, failed to evoke any significant public interest, Condon concluded that it would be inappropriate for *Science* to touch the matter, withdrew his offer of cooperation, and proceeded to enunciate high-sounding principles in support of his new-found belief that *Science* should not touch the subject until after publication of his report. When reminded that he had sought to initiate an article and had assured *Science* of his cooperation, Condon flatly refused to discuss the matter further.

Since Condon does not set the editorial policy of this journal, we pro-

ceeded to investigate the situation and prepared an article on the basis of the information that could be obtained. When there was reason to believe that relevant information was lacking, it was so indicated in the article. (For such lacks, it might be added, Condon can only blame himself.)

As for the propriety of an article in *Science* prior to the issuance of the Condon report (which we await with great interest), it is difficult to know where to begin. But when public funds and matters of public concern are involved, where is it prescribed that nothing may be said until the public is presented with a *fait accompli*?

As for Branscomb's anguished assertion that "the tragedy is that *Science* apparently fails to perceive that public acceptance of the rationality of science is at stake"; if it is at stake, it should be noted that *Science* merely presented a report on the interesting events in Boulder, it didn't create those events.

D. S. GREENBERG

Science

Since Condon (Letters, 30 Aug.) characterizes *Science's* article on his UFO project as gossip, perhaps he could be persuaded to answer two questions:

1) Is the memo printed at the end of the article "Colorado UFO fiasco" by Curtis Fuller beginning on page 30 of the magazine *Fate* (September 1968) an accurate transcription or copy of a memo written by Robert J. Low concerning the UFO project at the University of Colorado?

2) Is Low the author of this project's report, or otherwise associated with it in some capacity in the past or now?

J. B. HATCHER

3104 Silver Lake Road,
Minneapolis, Minnesota 55418

Conservation: Guideline for the Courts

Kesteven's excellent article, "A policy for conservationists" (24 May, p. 857), is a timely assist to the group of conservation-minded congressmen who have sponsored legislation for a National Conservation Bill of Rights. The resolution to amend the Constitution of the United States by setting forth a statement of national policy concerning the environment and natural resources was introduced in the House on 12 June. Congressman Richard L. Ottinger of New York sponsored the resolution

*Insights that
change outlooks...*

Haldane and Modern Biology

Edited by K. R. Dronamraju. Presents original essays reflecting Haldane's versatile contributions and outlining recent developments in biology.

\$10.95 cloth



FORERUNNERS OF DARWIN, 1745-1859

Edited by Bentley Glass, Owsei Temkin, and William L. Straus, Jr. Contains fifteen essays on the history of the idea of evolution by such scholars as Arthur O. Lovejoy, Francis C. Haber, and Jane Oppenheimer. \$10.00 cloth, \$2.95 paper

CONCEPTS OF SCIENCE

A Philosophical Analysis. By Peter Achinstein. A systematic study of basic scientific concepts such as definitions, theories, and models. \$8.95 cloth

MAMMALS OF THE WORLD

Second Edition. By Ernest P. Walker and Associates. "A major twentieth-century contribution to science." — Robert T. Orr, *California Academy of Sciences*. Volumes I and II, boxed set, \$30.00. Volume III, Classified Bibliography, \$15.00.

PROGRESS IN HUMAN BEHAVIOR GENETICS

Recent Reports on Genetic Syndromes, Twin Studies, and Statistical Advances. Edited by Steven G. Vandenberg. Eighteen papers reflecting the full spectrum of activities in this rapidly growing field. \$12.50 cloth

CANCER EPIDEMIOLOGY

Methods of Study. By Abraham M. Lilienfeld, Einar Pedersen, and J. E. Dowd. The first book to present the methods used in the epidemiological study of cancer. \$6.50 cloth

INVENTION OF THE METEOROLOGICAL INSTRUMENTS

By W. E. Knowles Middleton. Traces the invention and early history of the ordinary meteorological instruments to World War II. \$12.00 cloth

UPPER WATERS OF THE INTERTROPICAL PACIFIC OCEAN

The Johns Hopkins Oceanographic Studies, No. 4. By Mizuki Tsuchiya. The first study to deal comprehensively with the descriptive physical oceanography of the entire intertropical Pacific. Maps in seven colors. \$8.50 cloth

THE PHYSIOLOGY OF NERVE CELLS

By John C. Eccles. "The most thorough and complete statement of this art which has yet been published in book form." — *EEG Journal* \$5.75 cloth, \$2.45 paper

THE EPIDEMIOLOGY OF DEPRESSION

By Charlotte Silverman. An important critical review of the literature on psychiatric depression. \$7.50 cloth

PROCEEDINGS OF THE THIRD INTERNATIONAL CONGRESS OF HUMAN GENETICS

Edited by James F. Crow and James V. Neel. "A very valuable monument to progress in this relatively new area." — *International Surgery* \$14.50 cloth

1878-1968



THE JOHNS HOPKINS PRESS

Baltimore, Maryland 21218