ing to a dedicated high-intensity pulsed source for the 1990's should begin soon.

Under the constrained neutron scattering budget, the panel felt that only one pulsed source could be supported. Largely because so much of the Los Alamos facility is supported by funds that do not come from the neutron scattering budget, the panel felt it would be more cost effective to carry the WNR to completion and terminate the IPNS-1 program, which takes a large chunk out of DOE's neutron scattering spending. Kane says the agency will take several factors into account in addition to the report's recommendations and is not ready to close down the IPNS-1 program. For one thing, observers point out, Argonne has a considerable investment in the facility, which is scheduled to open for business this spring. For another, Argonne has seen a reactor and an accelerator closed down in recent years and not gotten much in return; it might be politically unwise to come down on the laboratory again. Argonne is now at work preparing a rebuttal to the neutron scattering report recommendation, based on the notion that, without IPNS-1, the United States would lose 5 years of experience with pulsed neutron sources.

While the near-term promise of intense pulsed neutron sources remains a bit cloudy, nearly everyone agrees that the competitive position of U.S. neutron scattering research is hurt by the lack of a mechanism for national planning for large scientific research facilities. In the United Kingdom, the Science Research Council plays such a role. The National Science Board here is charged with a similar responsibility, but in practice the board has confined itself to overseeing the National Science Foundation. In an era of research budgets that have not grown much beyond cost-of-living increases and of mission-oriented federal agencies that are not required to look after the health of science as a whole, and at a time of greater competition from overseas, this missing planning capability is seen to be a liability. As DOE's Kane says, it is one thing for the United States to deemphasize neutron scattering by choice, but it is quite another for it to drop out by default, which is what is happening now. —ARTHUR L. ROBINSON

New Niche for Science on Reference Shelf

Dictionary of Scientific Biography *is complete, gives historians of science a kind of magnum opus*

When the *Dictionary of Scientific Biography* (DSB) was being planned in the mid-1960's, it was thought that a modest four volumes would suffice. Now, 17 years, 16 volumes, and an index later, publication is complete, at least until the next supplemental volume.

In scale, scope, and scholarly ambition the DSB seems a more likely product of the late 19th century than the late 20th. Indeed its collateral ancestor is clearly the *Dictionary of National Biography*, the great Victorian tribute to eminent Britons that established the genre. But, in addition to carrying on a literary grand tradition, the DSB is a landmark work in the history of science; it has helped shape that relatively new discipline and given dignified employment to its practitioners.

The DSB statistics are striking: some 5000 individual biographies and more than 1000 authors from 90 countries. The price, too, is impressive—$695 for the full set. The fact that it is selling well—an estimated 6000 sets so far—is itself a testimonial.

The idea for the DSB was put forward in 1963 by Charles Scribner, chairman of Charles Scribner's Sons, which publishes the DSB, and a great-grandson of the firm's founder. The project, however, became a joint venture in the mixed economy of scholarly publishing.

Sponsor and copyright holder of the DSB is the American Council of Learned Societies. The ACLS landed a National Science Foundation grant for $269,000, sufficient in 1960 to create the editorial apparatus and get the writing under way. An editor in chief, Charles C. Gillispie of Princeton, and an editorial board were appointed under ACLS and, in effect, ran the project.

Scribner's became publisher of the DSB by competing successfully for the job. The DSB volumes began appearing serially in 1970, thus generating revenue for the project and royalties for ACLS.

> A group of scientific supernovae are given "book-length" essays . . . .

The grant agreement with NSF provided for repayment of government funds by ACLS from royalties. Almost half of the original grant has been paid back, but along the way ACLS has negotiated deferrals of payment in order to finance work in the project as it expanded. Now a supplemental volume is contemplated to extend DSB coverage. Work is scheduled to begin after selection of a new editor in chief. Gillispie, now in Paris on his own scholarly business, resigned last year after shepherding the DSB to completion.

The scholarly work for the DSB has been carried out mostly by historians of science in this country and abroad. The close links between historians of science here and in other countries made it possible to achieve broad international cooperation.

Perhaps the most severe test of that cooperation occurred over biographies of Russian scientists. Soviet historians of science were amenable to participating. Under arrangements made through the Soviet Academy, Soviet scholars took principal responsibility for Russian entries. This gave the DSB access to experts on Russian science, of whom there are relatively few in Europe and the United States. The Soviets, however, insisted on the inclusion of essays on Marx, Engels, and Lenin, focusing on science in the works and thought of each. The editors acquiesced, though only on condition that all entries meet the same editorial standards. The biographies of Marx and Engels were written by Robert S. Cohen of Boston University.

Action on perhaps the thorniest ideo-

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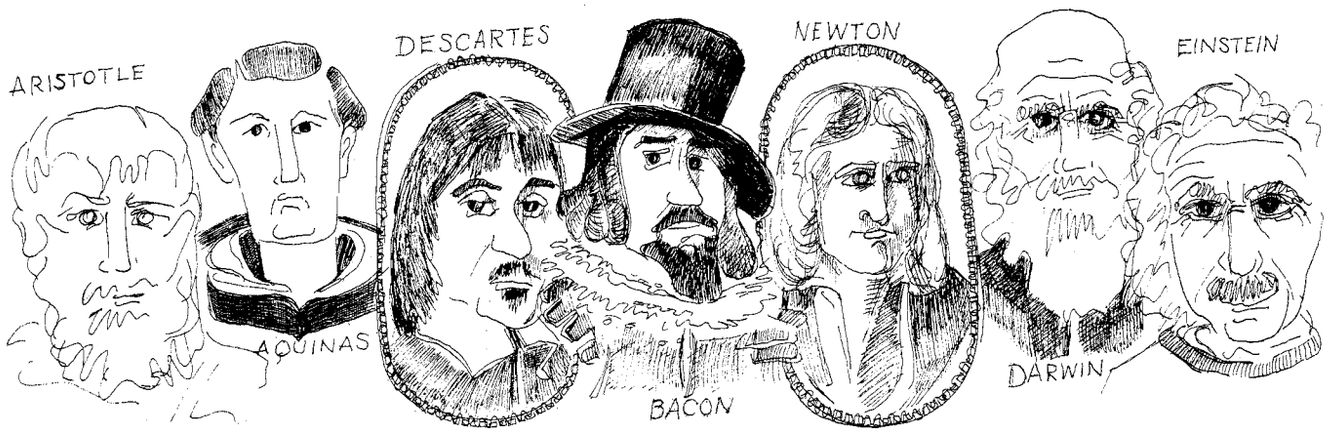

Jane Walsh

logical-editorial issue was deferred. It is the case of geneticist Triofim Denisovich Lysenko, the Stalin favorite who steered Soviet biology far off the course followed by scientists elsewhere. DSB ground rules permit inclusion only of the dead, and Lysenko died too late for inclusion. However, the DSB does contain an entry on the biologist Nikolas Ivanovich Vavilov, an antagonist of Lysenko's and a victim of Stalin purges of the late 1930's. He reportedly died in prison during World War II. The essay on Vavilov was written by Mark B. Adams, of the University of Pennsylvania.

The basic test of eligibility for the DSB is to have made an important contribution to science, regardless of when and where. The major formative editorial decision, besides that of including only the dead, was that to concentrate on the physical and biological sciences and mathematics. In the social and behavioral sciences, a few dominant figures were included, and these were picked for their broad influence. Freud is included, for example, and so is Franz Boas, the father figure of American anthropology. A kind of in-the-family exception is made in the case of history of science, with the inclusion of a graceful essay by Robert K. Merton and Arnold Thackray memorializing George Sarton and his influence on the discipline that he helped invent.

Non-Western science required special treatment. Entries on Arab science, for which reasonably good records exist, were overseen by A. I. Sabra, a member of the editorial board who is now at Harvard. Where individual scientists could not be identified, as in the case of Egyptian, Mesopotamian, and pre-Columbian science, for example, special essays were prepared. These appear in volume XVI, a supplement to the 15 volumes of biographical essays which also includes regular entries that missed volume deadlines.

In the case of Chinese science, again special circumstances prevailed. In the 1960's, cooperation with scholars in China was precluded by politics. The DSB editors were aware of the work in progress on a heroic scale by Joseph Needham and his associates at Cambridge University on the apparently open-ended *Science and Civilization in China*. The DSB does include essays on major figures in the long history of Chinese science, but the editors obviously regard the Needham work as an important complement.

Lengths of DSB entries generally reflect the importance accorded to individuals. A group of scientific supernovae are given "book-length" essays in the 10,000-word range. Examples are Aristotle, Newton, Einstein, Pasteur, Laplace, Leibniz, and Planck. Sheer versatility in a few cases appears to have earned full treatment. DaVinci is an example.

Criteria for ancient and medieval periods understandably differ from those for later epochs. Some entrants from earlier periods, when knowledge was not so rigorously subdivided, are better remembered as philosophers, historians, or even theologians than as scientists. So the DSB has its share of Pierre Abailards and Venerable Bedes as well as Roger Bacons.

Approaching the present, the editorial board's selection process winnowed progressively finer. For example, Kant is in, Hegel is not. The omission of Hegel seems at least mildly disputable since it was Hegel, after all, who methodologically handed on the baton to Marx, and Marx is very much in the DSB.

Long or short, the DSB essays concentrate on the subjects' professional lives. Personal data is generally limited to the essentials of family, education, and historical setting. Sociologists of science will not find much grist for quantification, for example, on birth rank in family. A scientist's work is the main concern, and descriptions generally do not tend toward easy oversimplification.

What gives DSB coherence as a major contribution to the study of history of science is the index volume, which took a team of eight indexers a decade to compile. According to the preface, the index is "organized to permit tracing the evolution of problems, concepts and subjects through the articles about persons who contributed to their development." With the index, the DSB becomes a formidable, multivolume, cross-referenced text.

While the DSB is a triumph for historians of science, it also reveals some problems for the profession. As the preface candidly acknowledges, the work reflects "availability of scholarship." And there are significant "disproportions." Contemporary science, in fact, poses a serious challenge for historians of science. According to the preface, "In the twentieth century, the choice has been held to relatively important figures. The justification might well be that historical perspective on the recent past is notoriously deceptive in science as elsewhere, but a more practical reason is the shortage of technically qualified scholars in the contemporary history of science."

If the DSB stands as an implied reproach to historians of science for living too much in the past, it is likely also to serve as a corrective. To emphasize the deficiency would be carping. After all, the reviews of the DSB have been uniformly admiring. As a collaboration among scholars, the DSB project has been exemplary. As has been the partnership between academe and the DSB's commercial publisher, one of the last of the unconglomerated publishing houses and one that also preserves a capable research department. As a final product, the DSB scored a rare double by earning regard both as a summa for the discipline and as an indispensable reference work for a larger audience.—JOHN WALSH