tion with meticulous experiment. He worked on such diverse scientific questions as the conservation of matter, atmospheric electricity, the origin of icebergs, the composition of the earth's layers, and the origin and distribution of minerals in Russia. His interest went far beyond the limits of natural science: he argued eloquently against the Norman theory of the origin of the first Russian state, wrote tragedies on direct orders from the imperial court, and prepared papers on demographic questions and on the improvement of crafts, industries, and agriculture in his native land.

During this period the Academy's internal conflict grew unchecked, many foreign scholars left Russia, and the recruitment of new scientists with established reputation became an extremely difficult assignment. The Academy's first charter, promulgated in 1747, ignored Peter's intention to grant this institution the right "to rule itself" and made it an agency of the central government; the Assembly of Academicians was *de facto* subordinated to the academic office which was in the hands of appointed officials who often had little respect for scientific work. Despite all these difficulties, the Academy became an institution with firm roots. An impressive list of foreign scholars were elected corresponding and honorary members, and the ties with the learned societies of Western Europe made intellectual relations between the East and the West a two-way traffic.

The third phase (1766–1802), which began 1 year after Lomonosov's death and in the year of Euler's return to St. Petersburg, saw a comparative increase in the ratio of Russian scholars: of 40 newly elected academicians and "adjuncts," 14 were Russians. The work of the Academy was dominated by two major scientific concerns: the continuation of Euler's work in mathematical analysis and the large-scale natural-scientific expeditions to various parts of Russia during the late 1760's and early 1770's. After his return to St. Petersburg, Euler completed some 300 papers; in this he was helped by N. Fuss and other students. At the time of his death in 1783, eight members of the Academy were his disciples. They wrote on various topics in mathematical analysis and astronomy, translated several of Euler's works into Russian, and worked on the mathematical curriculum for the newly founded primary and secondary public schools. They played an important part in the building of a great mathematical tradition in Russia. The natural-scientific expeditions, dominated by an empirical-descriptive approach, produced large quantities of valuable geographical, geological, botanical, zoological, and other information. P. Pallas' *Travels in Various Provinces of the Russian Empire*, published in German in 1771–73, was soon translated into Russian, French, and English.

In the course of this period, the Academy ceased to be the country's only scientific institution. The University of Moscow, founded in 1755, began to assert itself by the end of the century, although on a very small scale. Various government departments sponsored and participated in special research projects. This was particularly true for the medical, mining, and commerce departments which were active in natural-scientific expeditions. In 1765 the Free Economic Society was established; it conducted research in various natural sciences related to agriculture and regularly published its *Works*. In 1783 the Russian Academy was founded and immediately undertook an intensive study of language and literature. In all these research bodies the influence of the Academy of Sciences was paramount. Paradoxically, as a reaction to the ideological influences of the French Revolution, Paul I assigned the Academy the unenviable task of serving as the chief censor of books imported from the West. This censorship, which was strictly applied for a short time, kept from Russia not only the books espousing the political ideas generated by the French Revolution but also those dealing with many natural-scientific topics.

While this book contains much information and is an important contribution to the intellectual history of 18th-century Russia, it has a number of rather obvious shortcomings.

The authors have made no effort to hide their nationalist bias. All Russian scholars are treated in tender terms and are pictured as saints unsusceptible to ordinary human frailties. On the other hand, Russia's foreign scholars are seen as mere human beings, many of them honest and dedicated, but most of them, including Euler, subject to human weaknesses.

The role of Lomonosov has been blown so much out of proportion that the total picture of the growth of scientific thought in 18th-century Russia has been somewhat distorted. Despite the magnificient compass of Lomonosov's genius, his influence was actually one-sided: he provided a much-needed inspiration to the sparse ranks of Russian scientists, but he did not influence their scientific interests and their theoretical and methodological orientations. Neither of the two general scientific concerns of the Academy—mathematical analysis and the empirical-descriptive study of the country's natural resources—was a continuation of Lomonosovian tradition.

The authors have not explored adequately the changing attitudes of various social classes toward science, the philosophy of Catherine II's enlightened absolutism, the impact of educational policies on scientific work, or in general, the nature of the conflict between official ideology and the theoretical orientations and aspirations of individual sciences. They have thrown only partial light on the multiple forces which influenced the growth of scientific attitude as a part of Russian culture.

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Virus Hunters. Greer Williams. Knopf, New York, 1959. xix + 503 pp. Plates. $5.95.

The effective science popularizer has to surmount the double hurdles of factual accuracy and alluring presentation. In *Virus Hunters*, Greer Williams manages to mount both these barriers in telling what he describes as possibly the biggest "double take" in the history of medical science. He recites first the story of the classical microbe hunters, starting with Edward Jenner, and then the exciting activities of virologists in recent decades.

Williams retraces the drama told by Paul de Kruif in *Microbe Hunters* (1926), but adds to the story the research work of such people as Wendell M. Stanley, Ernest W. Goodpasture, Thomas Francis, Jr., Max Theiler, Richard E. Shope, John F. Enders, Jonas E. Salk, Albert B. Sabin, and Heinz Fraenkel-Conrat.

Aware (as he points out in his book) that many physicians felt that de Kruif, an ex-bacteriologist, was "a popular medical writer who too often went overboard," Williams tries to curb some of

his enthusiasm for promising leads when he discusses such ideas as a possible cure for the common cold and the speculation that viruses may cause cancer.

Typical of his restraint is this quotation from the chapter on the latter subject: "One thing that sensational headlines do not tell us, but the experienced know full well, is that any bold, unqualified announcement of a 'new cure' for cancer is a good sign that the source may be a charlatan, a crank, or a fool. It hardly matters which—the statistics are all against the claim proving true. Somewhat the same thing applies to assertions about the exact cause or causes of cancer, but in a lesser degree."

Yet *Virus Hunters* is bright and readable. Williams, a newspaper and magazine writer, former public relations director for the American College of Surgeons, and director of information for the Joint Commission on Mental Illness and Health, includes some of the very human, personal background of contemporary virologists. All this is a dramatic and often exciting story, and that is how Williams tells it.

He points out (and I think he proves his point with this book) that such data are of some importance to the understanding of scientists as human beings, even if they may not be too important to the public's understanding of science itself. Many science writers and some scientists would argue even this last point.

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We Come from the Sea. Hans Hass. Translated by Alan Houghton Brodrick. Doubleday, New York, 1959. 288 pp. Illus. $6.50.

The numerous books on skin-diving which have appeared in recent years may be roughly divided into several classes—those dealing with barren records of depth descents, others telling of hair-raising adventures with giant octopi, barracudas, and sharks, and still others devoted to the unsportsmanlike slaughtering of shore fishes to record their numbers and size. Another rather small group contributes lasting value to our knowledge of undersea life. The present volume may be accorded a different main objective—the presentation of outstanding photographs together with a creditable number of scientific facts.

In the search for photographic material, Hass admits that "Our first and foremost preoccupation on all our expeditions was with sharks and other marine creatures that are ready to attack. This was a matter for ourselves as well as for other scientists to whom we wanted to recommend our diving methods as useful for research." As a result, lovers of excitement will find much that appeals to their taste in this conservatively written book. The experiences vary from an encounter with a 5-foot brown shark, which severely wounded the diver, to the prolonged investigation of a 25-foot whale shark, which permitted all kinds of intimacies including the taking of closeup underwater photographs from all angles. I can testify to these extremes of shark psychology. Hass considers that blood in the water or attempts to escape by swimming rapidly away are most likely to induce a shark to attack. He believes that noise is an effective way to frighten sharks.

Much of the work was done with the aid of a 140-foot, three-master schooner, the *Xerifa*, fitted with dynamos, sound-recording instruments, and complete photographic and skin-diving equipment. Much of the latter was invented by the author.

The volume is a pleasant running account of the activities of several expeditions that ranged from the Red Sea and the Caribbean to Galapagos and the Great Barrier Reef. Among the scientists on these expeditions was I. Eibl-Eibesfeldt, whose studies of the Galapagos sea-lions are touched upon. Serious scientific work was also carried on at the Dutch island of Bonaire; this work included an investigation of the toxic effects on marine life of various paints on the ship's bottom, and observations on the responses of fish to mirrors and on their territorial behavior.

The chapter "We go back into the sea" provides an excellent résumé of the history of skin-diving. The list giving the names of fishes and birds mentioned is of little use, but both the bibliography and the index are good. The illustrations, of which ten are in color, are of unusually high quality, and take up about one-third of the book. There are three maps.

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The Population of the United States. Donald J. Bogue. With a chapter on "Fertility" by Wilson H. Grabill. Free Press, Glencoe, Ill., 1959. xix + 873 pp. Illus. $17.50.

The massive magnitude of this demographic catalog of contemporary America and its consequent utility as a reference source can readily be documented by statistics about the production. The book contains 26 chapters delineating the major variables of population structure and process, furbished with 385 substantial, numbered tables and 92 well-designed figures, as well as several hundred smaller tables inserted directly into the text; the text itself is a document of a quarter of a million words. The appendix consists of 68 full-page summary tables, and 90 pages are devoted to detailed data on occupation and industry. In short, no opportunity has been lost to display the host of research potentialities and policy implications which might otherwise languish unsighted within our national statistical system.

The list of contents is closely keyed to the kinds of socioeconomic data yielded by official enumeration and registration procedures; particular emphasis is placed on spatial distribution and economic characteristics; this is cross-classified by the conventional demographic control variables. Supplementary chapters based on diverse sources provide data concerning illness, religion, housing, and the populations of Alaska and Hawaii. The latter information is particularly welcome since it conveniently obviates for the analyst the nuisance of referring to otherwise scattered materials.

Bogue's book is useful in different ways, which I am confident will assure it wide distribution for a long time. Its most obvious utility is as a rich reference source, particularly for nonprofessionals working in applied fields. For this reason it is regrettable that the production is marred by an excessive number of trivial mistakes which tend somewhat to reduce the confidence with which the data can be used. More serious is the criticism that, in common with government analysts, the author has underemphasized the analytic relevance of errors of misstatement and misenumeration in officially published data. The book also has considerable virtues as a textbook, or at least teaching supplement, despite its almost prohibitive price for this particular market. From the