social and behavioral sciences started late and from a relatively small base. In 1958 they claimed about 3.7 percent of total federal R & D expenditures; in 1967 the percentage was 5.6. Categories are porous, but economics and psychology account for nearly two-thirds of total expenditures in this field.

One interesting detail noted by the committee is that, in the universities, R & D funds in the social and behavioral sciences are divided about equally among (i) the departments; (ii) the institutes, and research centers outside the departments; and (iii) the professional schools. (The authors say that professional schools of business, education, and medicine in general have a tradition of research in the behavioral and social sciences but that schools of law and social work do not.) But the authors find the departments too absorbed in their disciplines to work effectively on social problems; the institutes characteristically depend on part-timers and have little control over the graduate students who work within them, and the professional schools are too narrowly focused in their research.

Consequently the committee's main recommendation for change in the organization of academic behavioral and social science is that "a new university organization should be created for training and research on social problems." They would describe it as a Graduate School of Applied Behavioral Science. Training would be multidisciplinary, and although graduate education would be an important element, it is implied, at least, that the products of the school would have interests and loyalties which transcend the established disciplines. The committee recommends that the pattern of the schools should vary with local situations.

One of the problems facing the authors of this report and of earlier ones in astronomy, chemistry, mathematics, plant sciences, and physics has been the question of whether to address producers or consumers, colleagues or patrons. Inevitably, it seems, such reports mix shoptalk with a fairly glowing estimate of what scientists in a particular field can do for their country.

As a group of behavioral and social scientists, the BASS committee indulges in some telling self-criticism, but within limits. The report, for example, reflects concern about unrest in the society, but its concern about unrest in the social sciences is less clear.

The BASS report, however, is useful in general in providing an up-to-date map of the behavioral and social sciences and in particular in warning against sectarian tendencies in the field (chairman Hilgard calls it the "disease of the disciplines") and stressing that social and behavioral scientists will have a better chance of tackling social problems effectively if they really learn to cooperate.—JOHN WALSH

Denmark: A Late but Hurrying Entry in Science Policy Planning

Copenhagen. Denmark, although highly prosperous and scientifically and technologically advanced, is one of Europe's laggards in government attempts to orchestrate research, education, and industry. The Danes, with a population of only 4.8 million, however, have no illusions about how things are shaping up in a world that is increasingly dominated by a few economic giants. Nor are they unaware that many of the problems of modern society, particularly environmental problems, require in large part centrally applied, highly technical treatment. As a result, they have now embarked on a well-traveled but still very difficult course, with the goal of producing harmony among a variety of institutions that have evolved independently over a long span of years. In a sense, they are engaged in a microscopic replay of the United States' and other nations' experiences of the past two decades. And, therefore, there are lessons and patterns from which they can benefit. But the Danes readily admit that, because they did not do too badly with the old system, they are very late in attempting to work out government mechanisms in this area, and that, as a consequence, there is much encrustment of old ways to be dealt with.

Even lacking, though now about to be produced, is a reasonably accurate statistical picture of the amount and location of total national expenditures for research and development. Preliminary figures indicate a total of about $150 million a year, divided more or less equally among industry, institutions of higher education, and government-owned or government-assisted research centers. The amount is estimated to be 1.2 percent of gross national product, a figure which, if accurate, makes Denmark low man, by far, relative to its neighbors. The preparation of a statistical picture is one of the major undertakings of the government's principal instrument for science policy making, the Danish Science Advisory Council, a 15-member body established in 1965 but just now emerging as a center of influence. The Council, headed by the chairman of the economics institute of the University of Copenhagen, P. Nøregaard Rasmussen, is as close as Denmark comes to having anything resembling the U.S. Office of Science and Technology or the President's Science Advisory Committee. It is the topmost advisory body of its kind in the country, and its members are drawn from the scientific community, from industry, and from government. But organizationally it occupies a somewhat nebulous position in the government hierarchy. It is appointed by the Minister of Education and serves as adviser to that Ministry, but it is also supposed to perform an advisory function for all other ministries, as well as for the Parliament. Its secretariat, numbering about seven full-time professionals, is drawn, however, from the disciplinary research councils that function as granting agencies for academic science.

Far away on the organization chart, and with no direct connection to the Science Advisory Council, is the institution that is likely to be of greatly increasing importance in a time of concern over the relationship between research and industrial growth—the Academy of Technical Sciences, founded in

1937, currently receiving one-fifth of its support from the government, and operating or coordinating more than a score of research centers that deal mainly with industrial problems. Like almost everything else on the Danish scientific and technological scene, the Academy is small. Last year's receipts totaled about $5.5 million. But an organization of this type would seem to be of special importance in a country where there are only 100 firms with over 500 employees, and only 15 with more than 1000.

The Science Advisory Council's placement on the government landscape—it came into being in the course of a study on the expansion of higher education, in 1964—suggests the need for a good primer on organization. Nevertheless, despite its far-from-central position, the Council can number some significant accomplishments. It was upon its recommendation that, just 1 year ago, five separate research councils (in the humanities and the natural, social, medical, and agricultural sciences) were established to replace the single organization that had previously dispensed money for academic research. This might appear to be a small step, but, though it is still too early to tell, it is possibly an extremely important one for giving the government some means of influencing priorities in academic research.

Whereas the predecessor organization was simply a passive granting agency, the new councils were given authority to initiate research; furthermore, their chairmen meet together as a central commission, charged, among other things, with promoting interdisciplinary activities—historically a difficult objective in the rigidly compartmentalized European university system.

The councils, which have 11 members each, and with active research workers comprising the majority, handle a small proportion of research expenditures, perhaps about 10 percent of the money going into academic science. But, just as the U.S. National Science Foundation looks upon itself as the "balance wheel" of American basic research, Denmark's fledgling science planners regard that 10 percent as a possibly potent influence for nudging research toward directions they favor. P. A. Koch, a lawyer who heads the secretariat of the research councils, put it quite plainly in an interview. "Society has had no influence over what goes on in the universities," he said. "There are many areas that are neglected, especially in the use of research for social purposes." And Rasmussen, chairman of the Science Advisory Council, expressed a similar view when he said, "There is a tendency for researchers to be concerned mainly with their own needs and interests. What we have to do now is put more emphasis on dealing with the problems of society." Needless to say, both quickly added that these views do not imply any diminution of support or independence for basic research. Whatever lies ahead in this regard, there is no doubt that the individual research councils and the Science Advisory Council are cautiously seeking means of asserting some influence over the scope and direction of academic science. For this purpose, they are now talking about the possibility that the councils, rather than the university faculties, should be responsible for administering research fellowships. Again, a seemingly small move is involved in transferring such authority from institute-based professors to advisory bodies often dominated by those very same professors, but, in one case, values relevant to the problems of research tend to carry most weight, whereas, in the other, broader national considerations have a chance to be heard.

Italy: OECD Report Finally Emerges

London. Two years ago, the Organization for Economic Co-operation and Development (OECD) completed a study of Italy as part of its series of Reviews of National Science Policy. The ensuing report added up to a grand indictment of the Italian government's treatment of research and education. The government responded by blocking release of the report. Dissident students and scientists, however, got hold of parts of the report and circulated them to the press, but with various versions and translations flying about, it was difficult to determine where the dispassionate OECD analysis left off and labyrinthine Italian politics crept in. Now, at last, the official OECD document has been published, and it is plain to be seen why the government then in office would have preferred to see it confined to the OECD files.* For the report makes it perfectly clear that Italy is most delinquent among Europe's industrialized nations when it comes to supporting research and education. On expenditures per head of population for research and development, the Italian figure for 1967 was $10.7; the French figure for 1965 was $37.9, and the British figure, $39.8. (The U.S. figure, swollen, of course, by heavy expenditures for military and space research, was $110.5 in 1964, and it has risen considerably since then. Amidst current wailing over what is happening to the U.S. scientific position relative to the rest of the world, these figures help provide some sense of balance.) In proportion of gross national product devoted to research and development, Italy ranked low, with 0.6 percent, as compared to 2.3 for Britain, 2.0 for France, and 1.4 for Japan. In the category of qualified researchers and technicians per thousand of population, the figure for Italy was 6, as compared with 29.4 for Britain, 21.6 for Sweden, and 18 for Germany. (The U.S. figure in this category was 35.8.)

Turning to education, the study concluded that the "universities have only one third of the resources they need to do their job properly. In this state of penury," it continued, "research obviously comes off worst." Finally, the prophetic quality of this 2-year-old study is demonstrated by its observation that, in Italy, "the best projects for reform are often drowned in a sea of words." Over the past 2 years there has been little if any improvement, and in many respects the plight of research and education in Italy has substantially deteriorated as a result of strikes, administrative chaos, and a general deterioration of public administration.

—D.S.G.

* *Reviews of National Science Policy: Italy*, available from OECD Publications Center, Suite 1305, 1750 Pennsylvania Ave. NW, Washington, D.C., 20006; 212 pages; $6.

Another indication of the Science Advisory Council's potential power is the role it has played in Denmark's deliberations over participation in the construction of the 300-Gev accelerator planned by the European Organization for Nuclear Research (CERN). The Council's advice was simply that, given Denmark's limited resources for scientific activities, many things merit greater priority than international high-energy physics. The government is yet to announce a decision.

Denmark's science policy planners, like their counterparts in other nations, live with the generally justified feeling that the politicians upon whom they depend have little understanding of the difficulties involved in the care and feeding of research, and not much more understanding of the problems involved in applying science and technology to national problems. Traditionally, the response to this plight has been the preparation of a comprehensive study and recommendations, and such are now about to emerge, along with the study of statistics on research and development. What will be recommended is a closely guarded matter, pending delivery of the report to the proper government authorities. But it is plain that the science policy planners look with envy on the organizational arrangements for scientific and technical management at the government level that exist in other countries. In particular, they note that, in one way or another, most advanced countries today accord science, technology, and related educational activity a good deal more visibility and authority in the upper echelons of government than is the case in Denmark. For example, West Germany has a Ministry of Science; Britain, a Ministry of Technology as well as a Department of Education and Science; and France, a newly amalgamated Ministry of Industrial and Scientific Development.

Whatever is recommended will no doubt be reinforced by still another study that is to be made. This one will be conducted next year by the Organization for Economic Cooperation and Development (OECD), which so far has conducted nine national surveys of science policy making. Carried out by scientists and administrators from outside the country under study, the surveys have sometimes proved to be particularly valuable for research administrators trying to pound what they consider to be sense into the politicians with whom final authority rests. The studies have generally been quite thorough and, since they are conducted by outsiders, exempt from suspicions of self-serving motives. Interestingly, one of the inspirations for the studies the Danes themselves are conducting and for their request that the OECD study be made was the embarrassment they felt when they attended OECD meetings and found themselves lacking even fairly rudimentary information about science policy matters in their own country.—D. S. GREENBERG

Criminal Justice R&D: New Agency Stresses Police over Corrections

To judge from public opinion polls, campaign rhetoric, and news coverage, the American people increasingly worry about "crime in the streets." But thoughtful efforts to deal with crime are hampered by the absence of a body of scientifically established knowledge about criminals and the criminal justice system in the United States.

The history of R & D in police work, criminal judicial proceedings, and corrections has been, until very recently, one of neglect. Two years ago the President's Commission on Law Enforcement and Administration of Justice reported that "a small fraction of one per cent of the criminal justice system's total budget [of over $4 billion] is spent on research." The Defense Department, the report continued, spends 15 percent of its more than $75 billion budget on research.

Not only were federal R & D funds for criminal justice meager, but local and state governments, which spend most of the $4 billion expended for criminal justice, devoted even less money to research. And private industry's only contribution has been a limited technological interest in police hardware.

Even if there had been research money available, there was no sizable research community in which to spend it, and little likelihood that the results of the research would have worked their way into the decentralized, uncoordinated criminal justice facilities of the nation. The criminal justice system is actually three systems—police, courts, and corrections—operating with virtual autonomy at state, city, and county levels.

Before the 1960's there was no federal department which felt responsible for this maze of local institutions. The Justice Department saw itself primarily as the government's lawyer. In fact, the U.S. Government was merely one of the many criminal justice systems in the country, with law enforcement agencies (including the FBI), a court system, and prisons operated by the Federal Bureau of Prisons in the Justice Department. These federal organizations had jurisdiction only in federal cases. Only the loosest of ties existed between federal and local criminal justice systems, primarily through the FBI.

Robert F. Kennedy is generally credited with having been the man who shifted the emphasis in the Justice Department, making it feel responsible for what happened to all Americans involved in criminal proceedings, even on the local level. Just before he left the post of Attorney General in 1964 to run for the Senate, he set up the Office of Criminal Justice (OCJ), which later engineered the bail reform act of 1965. Early in 1965 President Johnson established the Crime Commission, with the new attorney general, Nicholas Katzenbach, as chairman and James Vorenberg of Harvard, the head of OCJ, as executive director. In its report of 1967, "The Challenge of Crime in a Free Society," the commission clearly delineated the position that had begun to evolve under Kennedy: the federal government must encourage change in local criminal justice agencies and must sponsor research in this field.

The extent to which police, courts,