group variously estimated at half to two-thirds of the approximately 800 members—there are two schools of thought. The first holds that the Academy should be closely linked to government and that, as a congressionally chartered scientific adviser to government, it should accept any assignment that comes its way. Under Seitz and his predecessor, Detlev W. Bronk, that is pretty much the way it has operated, with the result that NAS, and its operating arm, the National Research Council, now encompass about 400 committees and 750 full-time employees. In addition, Seitz and Bronk were both deep in the federal advisory apparatus, both holding posts on the President's Science Advisory Committee and on various other high-level bodies of the executive branch.

The alternative view of the Academy's role in Washington is often associated with NAS Vice President George B. Kistiakowsky (who, at age 68, is too close to the mandatory retirement age of 70 to be considered for the presidency, even if he wanted it). This view is that the Academy is both too close to government and too concerned with trivial odd jobs that might be handled elsewhere to focus it attention on what should be its central role—the development and fruitful employment of the nation's scientific resources. Further, members of this camp hold, public confidence in the Academy's objectivity is eroded when the Academy is financially intimate with politically embattled federal agencies that seek its advice on controversial matters. In their view, the Academy should scale down its activities, call its shots, and develop independent financial resources.

It is difficult to perceive the extent of the politicking that is going on in behalf of various candidates, but it is reported, for example, that several Stanford scientists have been circulating letters in support of Harrison Brown, who would seem to be an extremely promising candidate, since, of all those mentioned, he has been most deeply and lengthily involved in NAS affairs and is well known to, and generally highly regarded by, the membership. Handler, who in the last few years has rapidly moved up in the ranks of science-policy statesmen, also appears to have the potential for attracting a good deal of support. Both are situated in the academic world, which is deemed an advantage, since academicians overwhelmingly predominate in NAS membership.

One seemingly far-out notion that has been conveyed to the nominating committee by a group of NAS members is the view that thought should be given to a thorough reconstitution of the Academy—even to the point of possibly having a nonmember serve as president. This is, of course, a pipe dream, but it gives some idea of the feeling some members have of a need for radical alterations.

The timetable for the election is as follows: the nominating committee will report to the Council by 15 October, voting (by mail) is to be completed by 15 December, and the new president will take office 1 July 1969. The bylaws specify that the nominating committee is not necessarily the sole source of candidates. Any 50 members may also nominate a candidate. But at this point it is too early to tell whether this procedure will be employed. And since the Academy, like any other organization, values harmony, there is hope among the leadership that the individual selected by the nominating committee will be the sole candidate.

—D. S. GREENBERG

Max Planck Society: Filling a Gap in German Research

Munich. The Max Planck Society (MPG)* for the Advancement of Science is the successor to the Kaiser Wilhelm Society and continues to serve one of the latter's original purposes—that of compensating for the shortcomings in research of a university system whose professors still operate in a sort of pre-Bismarckian confederation.

More than 50 research institutes throughout West Germany are financed through the MPG; most of them carry out fundamental research in the natural sciences. The institutes, from the beginning, have offered top researchers an alternative to the university professorship with its very heavy burden of teaching and administration. The society also cultivates new and developing areas of research which might be excluded in the rigid university system.

During the Nazi era the work of the institutes was adversely affected by the flight of academics from the country and, of course, by the persecution of the Jews. The fact that most institutes were concerned with fundamental research seems to have protected them from direct interference from the regime. Nazi influence was, however, brought strongly to bear in fields such as psychiatry and aerodynamics.

A number of the institutes were in the Berlin area, and the war brought destruction of facilities and a scattering of staff. After the war the view ultimately prevailed among the Western allies that it would be advantageous to recognize the Kaiser Wilhelm Society and, incidentally, to attract society staff then in East Germany. In 1948, with a particular assist from the British in Göttingen, the society was reformed and renamed the Max Planck Society.

From the beginning, the society attracted scientists of the first rank. Between World Wars I and II the physics institute in Berlin, for example, had Einstein, von Laue, and Heisenberg as directors. A scientist was not forced to deal with a whole field, as he was in the university, and arrangements for obtaining equipment and personnel were usually better.

The original pattern was of one-man institutes, with a director and assistants who literally assisted him with his research. For some time the trend has been toward larger institutes with an intermediate group of academic members who have considerable scope in initiating research and who sometimes head departments within the institute. The latest development is the movement toward "centers" for research in a par-

**Max-Planck-Gesellschaft zur Förderung der Wissenschaften.*

ticular field, combining several institutes and making possible a broader interdisciplinary effort.

The Max Planck Institute for Biochemistry in Munich in many ways illustrates the evolutionary pattern of the MPG. Director of the institute is Adolf Butenandt, a winner of the Nobel prize in chemistry in 1939 for his work on hormones, who, like Max Planck, not only served as director of an institute but went on to become president of the MPG.

Butenandt has been president of the society since the early 1960's and is now serving his second 6-year term. Location of the MPG headquarters in Munich is in part due to Butenandt's unwillingness to shift his activities to Göttingen, where society headquarters had been since the war. Göttingen, which is near the East German border, had poor transportation links with the rest of West Germany, and a shift was made to Munich.

Butenandt headed an institute in Berlin before World War II. His interests were essentially in steroid chemistry; those of his older assistants were in other research areas. His associates credit Butenandt with having been one of the first in Germany to see the advantage of doing different types of biochemical research in a single institute. His Munich institute has a half-dozen departments. One of the department heads says the institute is run by a sort of "gentleman's agreement," matters of policy being settled in informal meetings.

Plans are now afoot for the creation of an MPG center for research in biochemistry in a Munich suburb about 10 kilometers from the center of the city. The new center will be on the same site as a medical center, which will include a relocated university medical school and hospital. The new research center will include the Butenandt institute and a couple of others and will have 15 departments; it is evident that new modes of administration and budgeting will have to be worked out. A center for research in biophysical chemistry is being built up in Göttingen, and other centers are likely to follow.

The regular MPG budget is about $62 million a year. Perhaps 5 percent of the budget is in nongovernment funds. The balance is provided, roughly half and half, by federal and Länder governments. The government funds are not earmarked for specific purposes or institutes and are spent as the society decides they should be, but there is no question that the opinions of government officials influence society decisions.

The society's central administration, however, plays a much stronger role than formerly in formulating policy. Before the end of World War II it could be said that the society consisted of the institutes; now the secretariat has gained authority and the president is the recognized chief planner. It is significant that Butenandt is the first full-time president.

The MPG has immense prestige in Germany and deep roots in the establishment. Membership in the society and, particularly, appointment to its self-perpetuating governing senate are distinctions prized by prominent Germans inside and outside the scientific community. The conditions of life for MPG researchers undoubtedly aroused some jealousy among university scientists; it is quite possible that this potential source of animosity is defused by the fact that so many distinguished academics are involved with the society and its affairs. One undeniable virtue of the society has been its flexibility, which has enabled it to deal with Big Science at one end of the scale and with little science at the other—for example, by creating the one-man institute for the cantankerous or the loners of ability.

A permanent problem for the society is that of deciding when an institute should be closed down or given an altered mission. When one-man institutes were the prevailing pattern the crisis usually came when the director died or retired. If no really distinguished successor was in sight, or if the kind of research done was being performed satisfactorily in the universities, the institute was likely to be closed down. Of the 81 institutes founded since 1911, 31 have been closed. As the number of one-man institutes has dwindled and the larger, departmental institute has become typical, a change in research emphasis, rather than dissolution, is often prescribed.

A reproach often aimed at the Max Planck institutes is that they drain the universities of their best researchers and contribute little to the training of new generations of scientists. The charge is flatly denied by defenders of the institutes, and, in fact, many MPG scientists do teach part time in the universities and many students, particularly in frontier disciplines, get research experience in the institutes. But it is reasonable to take the view, as the federal Science Council does, that relationships between the universities and the institutes can be considerably improved.

Butenandt espouses the view that the universities and the MPG's are mutually dependent, and he quotes figures indicating an exchange of personnel, though an uneven one: as of 1965, some 216 people at official levels in the universities came from the MPG while 121 university teachers of corresponding rank moved to MPG institutes.

Perhaps more to the point, however, he advocates a freer traffic between the institutions. Many institute directors and departmental chairmen serve as honorary professors in the universities (cynics suggest that they do so mainly to line up possible recruits for their institutes), but among junior staff there is little interchange. Butenandt proposes that university assistants be allowed to spend some time in MPG institutes, engaged in full-time research and free of teaching duties. MPG assistants, on the other hand, would spend some time instructing university students, gaining teaching experience which might lead to university careers. Under the present system they cannot gain the *Habilitation* qualification needed for lecturing in the university.

Such exchange arrangements have been tried experimentally and have apparently worked well. They have been few in number, however, and the good results seem to have depended on the special willingness of individuals on both sides to cooperate. Most MPG institutes are located near universities, which often have parallel institutes of their own. In some cases the relations are close and cordial; in others the MPG institute might as well be on the moon.

The artificial barriers separating the MPG and the universities are not too formidable. MPG scientists, for example, are paid on the same civil service scale as their university counterparts, and an effort is made to keep incentives equal. Institute directors or department heads negotiate the same sort of life contract with the ministry (settling details of salary, staff, and facilities) that a university professor does when he accepts his "call." But relations between the MPG and the university are unlikely to move dramatically in the direction desired by the Science Council unless reformers succeed in converting German universities into more satisfactory research institutions.—JOHN WALSH