administrative structure, the patient is going to lose his identity". In fact, however, it might have been more appropriate for the association to have said that it fears that the general practitioner, rather than the patients, might lose his identity. Judging from letters in the medical journals, that is the real fear.

The Association of General Practitioners, which with a membership of about 2,000 represents something like 10 per cent of all GPs, seems to be particularly wedded to the myth of professional independence and clearly suffers from a sense of insecurity about the profession's future. It apparently fears that the proposed area boards will somehow control or scrutinize the way a GP organizes his work, the staffing of his surgery and so on. Under the existing system the GP has a free hand in all this; when a patient comes to register, all the GP has to do is notify his executive council of the application and it confirms the registration. Thereafter the doctor is solely responsible for his patient. In fact, the proposals in the Green Paper were meant simply as a way of making better use of available medical resources and it is difficult to see why they need interfere with the relationship between doctors and patients.

Now it is up to the leaders of the profession and the Government to do some careful public relations work and convince the GPs that the proposals do not threaten their way of earning a living, but do offer a better service to the public. The medical profession has, of course, more than its fair share of reactionaries, who will take a lot of convincing, but no doubt they will eventually come round to the idea that reform of the administrative organization of the health service is long overdue and that the ministry's proposals are not really sinister. In 1948, many GPs resisted the idea of health centres—now so many are demanding them that Sir George Godber in the latest annual report on public health (see page 428) talks of the health centre explosion.

PLANETS

Venus Question Settled

AFTER almost a year of heart searching by space scientists, it now seems that the alarming disagreement between the American Mariner 5 and the Russian Venera 4 measurements of the atmosphere of Venus has been dispelled. This was the general consensus at a recent meeting at Kiev devoted to lunar and planetary astronomy, and the outcome can be seen as a vindication of earlier ground based observations. The discrepancies between the two sets of space probe data began to come to light late last year only a few weeks after the landing of Venera 4 on Venus on October 18 and the close approach to the planet a day later by Mariner 5, and seemed to have their origin in the different ways the two groups of experimenters measured height above the planet's surface. In the Russian experiment, the height of the probe as it measured atmospheric parameters during its descent by parachute was found from a single reading by a radioaltimeter, coupled with the aerodynamic properties of the parachute system. On the other hand, Mariner 5 used a radio method to probe the atmosphere as the spacecraft flew by the planet, which at its closest approach was some 4,000 km from the surface, and data were obtained as a function of distance to the centre of the planet. To convert the American data so that the distance scale is relative to the surface of the planet, the radius of Venus known from ground based radar observations has to be introduced.

Pressure and temperature measurements by Mariner 5 seemed to overlap the Russian measurements nicely at a height from the surface which according to the Russian radioaltimeter was 26 km. But coupled with the American estimate of the distance of this reading from the centre of Venus, the radius of the planet comes out to be $6,085 \pm 10$ km, significantly different from the terrestrial radar value of $6,053 \pm 2{\cdot}2$ km. Discussion of this discrepancy had occupied planetary scientists for much of the previous year, and has cast something of a cloud over the success of the two probes. At the Kiev meeting, however, suspicions that it was the Russian radioaltimeter which was at fault seem to have been given some support. All the speakers at the meeting seemed to recognize that the correct height scale for the atmospheric parameters was one based on the Mariner 5 measurements coupled with the radar determinations of the radius. The Russians have admitted, it seems, that the design of their radioaltimeter was such that it was capable of being in error by a factor of two, exactly the amount which planetary scientists say would explain the disagreement between the two sets of measurements.

As well as vindicating the techniques of planetary astronomers working with equipment on the ground, there was general agreement at Kiev that the average surface temperature and pressure of Venus are roughly 700° K and 100 atmospheres rather than the very much lower values which Venera 4 had seemed to indicate. Radar astronomers have been particularly conscientious during the controversy, carrying out a deal of reworking of measurements, and clearly ground based work still has a part to play in planetary astronomy. In fact, the lesson to be learnt from the affair is the way in which equipment on the ground is a very necessary supplement to the work of space probes, and can produce more reliable results. Astronomers have been pointing out for some time now that for a modest outlay on ground based equipment a valuable return of information on the planets can be obtained. A suitably large infrared telescope on the Earth, for example, would be capable of revealing the presence of life on the nearby planets through an examination of trace constituents of their atmospheres. Strong arguments in favour of constructing a 1,000 inch infrared telescope for an expenditure of around £5 million—roughly the cost of a Mars probe—have been put forward by Dr P. Connes, Professor P. Fellgett and Professor J. Ring (*Science Journal*; 1967); clearly this is the way for countries less well endowed with spare money than the United States and the Soviet Union to join in the space race.

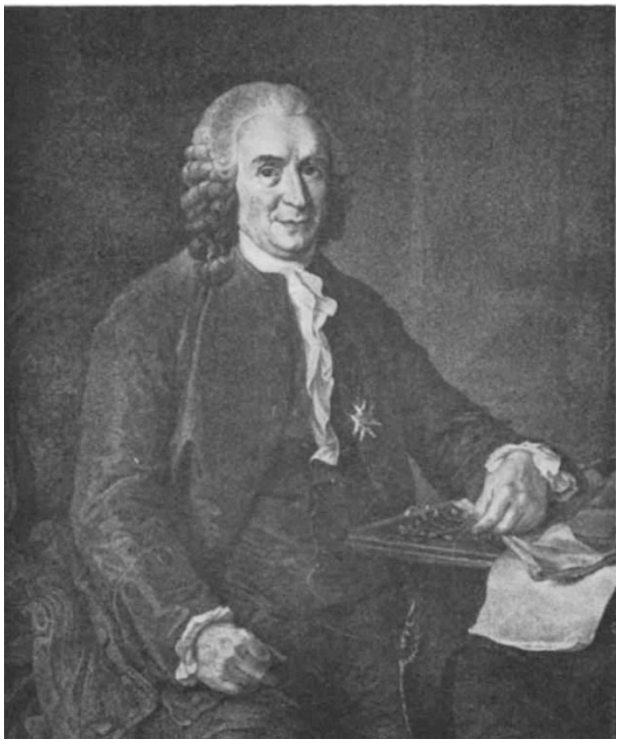
SOCIETIES

Collections in Danger

THE money which the Linnean Society of London raises in response to the appeal for development

launched on Tuesday will go first of all to rehouse the valuable collections of plant and animal specimens, made in the eighteenth century by the Swedish botanist, Carl Linnaeus. He was the founder of the now universally accepted system of binomial nomenclature by which living organisms are given two names, one denoting the genus to which they belong and the other denoting the species.

Linnaeus named all the living organisms known in his day and so the collections he made contain mostly type specimens—the actual plants and animals to which he originally gave the names, which are now the absolute source of reference for anyone wishing to identify one of these species. The 14,000 plants include the type specimens of such familiar plants as the common lawn daisy, *Bellis perennis* L. (L. for Linnaeus who originated the name); barley, *Hordeum vulgare* L.; rye, *Secale cereale* L.; and *Cannabis sativa* L., otherwise known as hemp.



Engraving by S. G. and J. G. Facius of the portrait of Linnaeus at the age of 64 by Roslin.

The collections are regularly consulted by many scientists, not only taxonomists, to whom it is vital to identify correctly the material with which they are working. Since 1946 the collections have been consulted about 1,200 times by people from forty-five countries. There are also between fifty and sixty postal enquiries each year about the specimens which are housed in a cupboard in the society's meeting rooms in Burlington House. This accommodation is quite inadequate for such valuable biological material, and plans have been produced for a hermetically sealed strongroom in the basement to house the collections safe from fire and the ravages of beetles, which have already irreparably damaged some of the specimens.

The cost of the strongroom will be about £13,500, and the rest of the £55,000 being asked for will be used for much needed extensions to the library, which contains many of Linnaeus's own books, new council rooms, and general redecoration. Use will also be made of some new basement space made available since the Royal Society moved out of its old rooms in Burlington House.

The collections and books came to England in 1783, five years after the death of Linnaeus, when his family sold them to Edward Smith, a wealthy amateur naturalist and friend of Sir Joseph Banks, botanist and then president of the Royal Society. Smith paid in all £1,088 5*s* for the collections. In 1788 he founded the Linnean Society, which bought the collections from Smith's executors when he died in 1828. After occupying various homes in London, the society—devoted to the cultivation of the science of natural history—moved into its present rooms in Burlington House in 1873.

MANPOWER

The Future for Engineers

Some useful and constructive sparks of disagreement improved what might otherwise have been a very pedestrian day's meeting at the Institute of Mechanical Engineers on October 24, on the utilization of professional engineering manpower. The role of education, training, and other less concise euphemisms for learning were central to most of the discussions, with engineers being variously treated as units, brains, potential managers and people. The friction generated in having to define the subject under discussion—let alone in discussing it—did much to bring the meeting to life.

One of the speakers, Mr H. Gott of Associated Nuclear Services, pointed out that certain aspects of history are traditionally considered worth knowing—dates of battles, for example—while others like engineering achievements are ranked as of poor educational value. The appeal of engineering was consequently affected, he felt, and although murmurs of approval were natural enough from a partisan audience there must be a wide sympathy for this view.

Sir Norman Kipping began the meeting with a speech on "The Challenge of Change" that had both the merit and fault of being eminently reasonable. Several of the later speakers were quick to emphasize that the problems surrounding the use of engineers were not susceptible to easy solution, if they could be solved at all, and that the relationship between the engineer and the technological manager should be approached at the earliest educational levels as well as after several years of industrial work. Professor M. Seaman, of Loughborough University, maintained that the era of the engineer-manager is already with us, and he outlined a course of study that he thought suited to this end. He envisaged a student spending his early twenties in a period of study shared between university and industry, following this by several years on industrial projects and then rounding off with an MSc or PhD; so that by thirty the man would be a qualified engineer-manager.