common diseases. Often financial and other resources have diminished and Governments may have little understanding of what is involved in the control and eradication of diseases like malaria. Apart from the needs of research, in which the new universities must play their part and which many developing countries tend to overlook, there is need of more surveys in nutrition as well as an acute problem of training personnel. The vital importance of overseas research is unmistakable from this paper, as is the responsibility of Britain for maintaining assistance there at a high and ever-increasing level until the emerging countries are able to organize their own resources.

Health and nutrition problems, however, are closely linked with social problems and policy, and are not to be solved by health agencies alone. They are dependent on adequate supplies of water, sewerage and on transport as well as food production, processing and marketing, and Dr. Dedijer's argument for integral national policies for science could not be better illustrated. Here Mr. G. de Hemptinne's article on the science policy of States in the course of independent development links the discussion with the science policy programme of the United Nations Educational, Scientific and Cultural Organization.

He, too, begins with the axiom that each country must frame its own science policy without trying to enforce ready-made schemes from abroad. While he lists seven interdependent functions which countries with long scientific traditions have at their disposal through a complex structure of organizations and institutions, this is intended to demonstrate that scientific policy is the art of organizing and integrating this network to the greatest benefit of the nation as a whole. Such a structure is at best fragmentary and sometimes non-existent in the newly independent countries, which have accordingly to set up mechanisms for planning their own national science policy without waiting for a fully fledged operational network of research to be functioning efficiently. In this difficult task he believes that technical assistance can make an important contribution.

The developing countries, he suggests, have an option of three types of organizations for planning a science policy, according to whether their sphere of competence extends to: (*a*) the natural (including the applied) sciences; (*b*) the natural and the social sciences; (*c*) all branches of learning. The choice will depend, above all, on political, linguistic and religious homogeneity, and the greater this homogeneity the greater the advantage of a mechanism competent to cover all branches of learning. Then there is the problem of determining the level of Government to which the national council responsible for such planning should be assigned, and here care must be taken to avoid making the council responsible for controlling any element of the operational network of scientific and technical research.

In the remaining part of his paper, Mr. de Hemptinne analyses the various features of institutions which make up a nation's scientific structure and contribute to its scientific potential, and the problems of financing scientific and technical research, before finally considering the objectives of scientific policy and the options which a country with limited resources may need to exercise. The Department of Natural Sciences of the United Nations Educational, Scientific and Cultural Organization has already undertaken pilot investigations on science policy and the organization of research in certain Member States according to the criteria of originality, methods used, range of experience achieved, population and economic development, and with due regard to geographical distribution. These investigations will be extended progressively to other countries, and the experience and information so far gained in this field have already enabled the Organization to assist Member States in setting up an operational network of scientific research and framing a national science policy. This issue of *Impact* can scarcely fail in assisting that effort and the task of education at the highest Government-level to which Dr. Dedijer more particularly addressed himself.

IMMUNOELECTROPHORESIS

The Agar Precipitation Technique and Its Application as a Diagnostic and Analytical Method

By Dr. F. Peetoom. Pp. vi + 114. (Edinburgh and London: Oliver and Boyd, Ltd., 1963.) 35*s*.

THE gel-diffusion precipitin techniques, which are now ten years old, have contributed greatly to our knowledge of plasma proteins and, in this and other complex protein mixtures, this contribution is not yet fully realized. Possible uses range over so many diverse disciplines that there is still a need for an accessible account of the theory, technique and applications of the various methods, which can be used in the laboratory, since Ouchterlony's masterly review is available only in the large and expensive *Progress in Allergy* (Basle: Karger, 1962). From the title of Dr. Peetoom's book one had hoped that it would fill this need, but unfortunately, for many reasons both of omission and commission, it does not.

The treatment of the experimental and theoretical basis for the development of precipitin lines is extremely cursory, with no references to the several critical accounts in the literature. Though the title claims to cover the whole range of gel-diffusion techniques, practical details and applications are described only for immunoelectrophoresis and, very briefly, for the double-diffusion method. The account of antiserum production gives little real help to the new-comer, and there is no guidance on methods of absorption to produce the specific antisera required for more precise and quantitative work. Indeed, there is no mention of the many quantitative methods now available, and no consideration of the quantitative limitations of the methods which are described, a fact which makes nonsense of the following remarkable series of assertions: (p. 47) "the β_2-M lines is only found in just over half the number of normal sera examined"; (p. 50) "β_2-M globulin is absent from the serum of the new-born"; (p. 51) "β_2-M globulin, too, may be partly or wholly absent" from the serum of patients with "agammaglobulinæmia".

Nomenclature is not discussed critically, and the style is diffuse and difficult to read. A translation which makes no better attempt at English style than "After the eleven each lasting one minute incubations the serum hardly contained . . .", etc. (p. 88), the strange punctuation, and the various misprints should not have appeared from a British publishing house. The figures are reasonably clear, though a comprehensively labelled large-scale picture of immunoelectrophoresis of normal human serum is, surprisingly, omitted.

There is little discussion of the relation of the concentration of the serum proteins to their metabolism, and the effects of disease states are superficially handled. No mention is made of applications to plant, bacterial or virus proteins, but it is good to see a brief section on analysis of tissue antigens; all these fields should provide many future applications for gel-diffusion immunochemistry.

Qualitative analyses are of only limited value in biological systems, and 1963 is far too late for a purely qualitative handling of a field of work which has been on a quantitative basis for some years, important though such work was ten years ago. J. F. Soothill