The paper by Dr. J. C. Woodrow and W. T. A. Donohoe which appears in the B.M.J. this week at page 139 is a further contribution to the natural history and prevention of Rh-immunization in pregnancy. Their work emphasizes that primary immunization occurs as a result of the first pregnancy (though no antibody can be detected) and that a very few foetal cells passing over during the next Rh-positive, ABO-compatible pregnancy will lead to the rapid appearance of anti-Rh antibodies. They also provide more evidence that immunization, both primary and secondary, may follow from the entry of less than 0.1 ml. foetal blood into the maternal circulation, representing a foetal cell score of 0–4. This was more often the case at the end of the second Rh-positive, ABO-compatible pregnancy than after the first.

Anti-D gamma-globulin is now in routine use in the United Kingdom for preventing Rh-immunization, but because supplies are limited its use has been restricted to Rh-negative primiparae who give birth to an Rh-positive, ABO-compatible infant and in whom the foetal red cell score is 5 or more, this representing 0.2 ml. or more of foetal blood. But recently the Ministry of Health has recommended that treatment should now be based on finding any foetal cells. The report of Woodrow and Donohoe shows that the former criterion of selection leaves unprotected two-thirds of the cases in which anti-Rh antibodies might be expected to develop after the next Rh-positive, ABO-compatible pregnancy, these cases having foetal cell scores of 0–4. It seems, therefore, that the foetal cell score shortly after delivery is not a reliable way of selecting all patients for treatment, since a significant number of women who subsequently become immunized have no detectable foetal cells. Furthermore, the method of detecting and counting foetal cells can present difficulties in inexperienced hands, yet many hospital laboratories are now burdened with the additional task of providing this service. It is becoming apparent that to protect the maximum number of patients at risk the best policy would be to give anti-D to all Rh-negative women who give birth to an Rh-positive, ABO-compatible infant and in whom antibodies have not been detected, regardless of parity or foetal cell score. Even patients with ABO-incompatible infants have some, though a much smaller, risk of becoming immunized, and a case exists for treating them as well. It is probably also wise to treat all previously unimmunized Rh-negative women who abort, since it is usually not possible to ascertain the blood group of the abortus. The practicability of such a policy will obviously depend on the supply of anti-D gamma-globulin of suitable potency, and until there is enough some degree of selection of cases for treatment is necessary. It is hoped that enough anti-D will shortly be available to meet the needs of all Rh-negative primiparae at risk.

Finally, there is the problem of what constitutes an effective dose of anti-D gammaglobulin, and on this question the Medical Research Council is at present conducting a trial. The 200-µg. dose now in use will clearly prevent immunization in the great majority of cases, since most transplacental haemorrhages are small. But occasionally a large haemorrhage (up to 150 ml.) occurs, and in such cases the usual dose may be ineffective. It would be wasteful to give all women at risk a larger dose of anti-D in order to cover this very small group of cases. These large haemorrhages will cause high foetal red cell scores, and to detect such cases (constituting perhaps less than 1% of all transplacental haemorrhages) continued scoring of foetal cells in all cases might be thought to be justified, since they will require correspondingly high doses of anti-D (1,000 µg. or more) to suppress Rh-immunization.

Looking after Children

The care of children for gain is regulated by the Nurseries and Child Minders Regulation Act, 1948, which empowers local health authorities to keep registers of premises where children are looked after and also of the persons looking after them. When children are received to be looked after for a day or a substantial part of it for reward, both the premises and the person must be registered.

Most local authorities exercise a strict control over registration and insist on a high standard to ensure that the person in charge of the children has reasonable qualifications and experience and that there is adequate supporting staff. In addition there must be suitable arrangements for the children and provision for routine medical supervision. Arrangements must be made for a general practitioner to attend in cases of accidents or emergency, and all accidents must be notified to the local health authority. Play groups, as such, have no statutory position. A play group is either a full-time or a part-time day nursery according to the number of hours that it is open, and must be registered as such.

The Act is comprehensive, and any person caring for children for gain and not being registered would fall into the category of illegal day minder and would be the subject of prosecution. The only part of the Act which is ambiguous is that which refers to “a substantial part of the day,” and this has never been clearly defined, but most local authorities would take a half-day or a session of three hours as being a substantial part of the day.

An application for registration does not mean automatic approval, and many applicants are disappointed, but they have recourse to an appeal in the courts. In fact, most local authorities take great care to help applicants in putting their premises in order, and when an application is refused it is usually because it is quite impossible for the person to care for children adequately.

Gross neglect of children by illegal day minders is uncommon. Usually it arises not from unkindness but from lack of thought in failing to provide sufficient space and facilities for the children. In some of the larger conurbations with immigrant populations and large groups of married students there has been a growing tendency for young children to be left with neighbours, who charge a nominal fee for looking after them, and it is here that the greatest danger arises, because usually the houses are inadequate for the purpose and the children are either put to bed for the whole day or left to sit around doing nothing. In such conditions there is grave danger to health.

Faulty feeding leading to malnutrition, and neglect of common symptoms of illness by untrained persons, together
with possible overcrowding, can lead to an explosive situation, and outbreaks of infectious disease may be expected. Lack of provision for the development of the growing child may also have some effect on his mental health. The remedy is for the local health authority to provide sufficient day-nursery accommodation in the proper places for all children who may require this form of care.

**Doctors and Computers**

The presence and unknown powers of the seemingly Olympian, omnivorous computer are apt to overwhelm all of us. The *B.M.J.* has recently carried a series of articles on computers in medicine, and now the most recent issue of the *British Medical Bulletin* is devoted to the same subject. This is appropriate, because though the first computer was not constructed in Britain, British mathematical research and technological ability have played a leading part both in the design and construction of computers themselves and in devising the ever-increasing number of tasks they can usefully undertake.

Even within a defined field such as medicine these tasks are so diverse that the planning committee of this issue of the *Bulletin* found that it could not attempt to cover all aspects of the problem, and so it excluded techniques which are common to other branches of science and the use of computers in the administration of medical services. Also, though this is not stated, mention is not made of the immense potential of computers in epidemiological research in both infectious and chronic disease—but this is implicit in several of the papers.

Two themes run through the 16 papers. The first is the statement of the ways in which computers will be able to do doctors' work for them. For instance, the day may be at hand when a doctor in a hospital ward, or even in general practice, will by dialling a number, or perhaps using a type-writer keyboard, be able to have the case history of his patient projected on a special television screen. Through the processes of record linkage information from several sources may be included. A similar system is already being used by the big airlines for tracing seat reservations. With the help of modern automatic biochemical equipment, such as the AutoAnalyzer, computers can produce a printed statement of the biochemical contents of a patient's blood within an hour of venepuncture and show how each result compares with the normal range for the person's age and sex.

Computers can now undertake the complicated task of planning the optimum distribution of dosage for patients who are to have their cancer treated by radiotherapy, and improvement in telephone communication is making it possible for small departments to "consult" computers elsewhere. Indeed, E. W. Emery, of University College Hospital, reports that with the help of Telex he obtained a treatment plan from a computer in the U.S.A. within a few minutes. Computers can also plot data, submit them to logarithmic (or any other) transformation, and plot them again; they can prepare reading lists, and even scan articles they have selected to give some idea of the content. Computers are learning how to count chromosomes. In these and many other roles the computer is the servant and man the master.

The second, more subtle, theme is that the servant is teaching the master, and nowhere is this more persistently emphasized than in the several articles which discuss the role of computers in diagnosis. L. C. Payne in the opening paper writes, "When a patient enters a consulting-room a clinician will subconsciously perceive his colour, debility, age, sex, nervousness, and so on, without any information being formally exchanged. A computer in the place of the clinician, like any other machine, subconsciously perceive nothing." This simple statement of the problem is developed by other contributors, especially J. A. Anderson and J. A. Boyle, of Oxford and Glasgow, respectively. To what extent are we aware of our own subconscious processes when we grapple with the problems of diagnosis? If we are to look for help from computers, would a differential diagnosis of each symptom be sufficient? Or do we want the computer to identify disease entities? If the latter, are we sure in our own minds what a disease entity really is? If the former, have we ever considered the extent to which the symptoms of a disease are independent of each other? For if they are interdependent, and we do not forewarn the computer of this, we may simply be using it as a device for leading ourselves up the garden path.

The computer is utterly uncompromising in its demand for clear instructions, and this demand reaches far beyond the mystic skills associated with the art of diagnosis. As J. Anderson, of King's College Hospital, and J. A. V. Bates, of the Medical Research Council, point out, this is forcing doctors to pay more attention to the precision with which they use words, the logic of their sentence construction, and the rationale behind the preparation of their case records.

In his introduction to this issue of the *Bulletin*, J. A. B. Gray, the new Secretary of the Medical Research Council, makes the rather chilling assertion that he believes it to be probable that the computer will turn medicine into a mathematical science. His reasons may seem obscure to the practitioner whose daily concern is the routine management of common illness, yet he may well be right. The computer is already helping us enormously in our daily work, but perhaps its greatest service may prove to be its ruthless requirement for us to be more logical.

**Shipshape**

Visitors to the annual meetings of the British Medical Association will have noticed at the exhibition customarily held the exceptionally fine displays of work in progress staged by the medical branches of the armed Forces. The Royal Navy's contributions come from the Royal Naval Medical School at Alverstoke, near Gosport, in Hampshire, and some account of the varied and interesting work being carried on there is given in its latest annual report. A rough crossing of the English Channel or the Irish Sea is enough to show...