# PAPERS AND ORIGINALS



## The Health of Women*

SIR JOHN PEEL

*British Medical Journal*, 1971, 3, 267–271

One of the most frequently quoted definitions is that from the World Health Organization, that "Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity." This definition must have emanated from a committee in one of its more euphoric moods, for I doubt whether any one of us is likely to achieve during his lifetime this state of health or, if fortunate enough to achieve it, likely to maintain it for long. Perhaps the committee arriving at this definition had in mind the words of Robert Browning, that "A man's reach should exceed his grasp, or what's heaven for?" For many, however, who try to keep their feet on the ground the inclination would be more to agree with Paget, who when writing to the young Edward VI's Protector warned, "We must not think that Heaven is here, but that we live in a world."

In the world in which we live today there have been very substantial changes since the sixteenth century, and in the care of the female members of the community there has been great progress. During this meeting we shall be discussing in some detail many of the problems concerned with the health of women. It is my purpose now to cover the field in a more general way and to highlight some of the many problems related to health that are particularly relevant today, though it would be quite impossible within the short space of time at my disposal to deal with every facet of the health of women.

### Changing Situation

The most valuable commodity that any individual, whether man or woman, can inherit is a healthy constitution. Any country that wishes to improve the health of its individual citizens must be prepared to invest even more of its resources than hitherto in the areas of maternal and child welfare. The dividends from such investments are incalculable, provided the endeavour starts at the very beginning. The beginning of life is the moment of conception, and so the ultimate health of the individual depends in no small measure on the many factors which affect intrauterine development. The endeavour must not only continue throughout pregnancy and childbirth but must continue into infancy, childhood, adolescence, and adulthood. Women themselves must play the leading part, firstly, by taking full advantage of all that is available to them during pregnancy, and, secondly, by accepting an even larger measure of responsibility in the care of their children, not only during childhood but into adolescence. Women form about half of the population, and in spite of all the current talk about the equality of the sexes and the liberation of the female their reproductive function must differentiate them from the male. This is one of the inescapable facts of life which nothing that we can foresee at the present time is likely to change.

Women on the whole are healthier than men. The female neonate survives the hazards of birth better than the male. The death rates in babies of one week, one month, and one year are all significantly lower in the female than in the male. Death rates at all ages are lower in the female, and the expectation of life is nearly five years longer.

What do these bare facts reflect? Is it an inherently better constitution—genetically determined—is it a different, possibly less degree of environmental stress? Do the figures alternatively reflect a more intelligent application of some at any rate of the principles of health care and health education? It may well be that all three factors are operative. Today, however, a great many changes in the female way of life are occurring, which may alter the traditional pattern of health statistics in the next generation. While the total involvement of previous generations of women in the maternal role and the shelter that they have received from many of the environmental stresses outside the home gave a degree of protection in regard to health hazards, the situation is rapidly changing.

The greater involvement of women in full- or part-time employment in industry, business, and the professions makes them equally liable to the environmental stresses and accidents associated with such a way of life. Women are as equally involved in the health hazards associated with pollution in our modern society and in the risks due to the greater mobility of populations and the frequency of travel, to name

*The Presidential Address given at the 139th Annual Meeting of the British Medical Association, Leicester 1971.

**King's College Hospital, London S.E.5**

SIR JOHN PEEL, K.C.V.O., F.R.C.P., F.R.C.S., F.R.C.O.G., Surgeon Gynaecologist to H.M. The Queen

but two of the areas in which the modern way of life is increasing rather than benefiting standards of health.

## Advances in Maternal Care

I should, however, like to return to some of the problems associated with the reproductive function of women, partly because as an obstetrician I know more about this subject than some others, but also because it is very relevant to the scene in 1971. Much progress has been made in reducing mortality due to childbirth. It now stands at fewer than two deaths in every 10,000 births. The mortality is only one-twentieth of the rate 40 years ago. Many factors account for this dramatic progress. Advances in medical knowledge, better training of all those engaged in the care of women during pregnancy and childbirth, a better distribution and administration of available services, and particularly improvement in the economic and health standards of the population in general and of young women in particular. Even at this remarkably low level it has been estimated that nearly half of these deaths could be prevented. The avoidable factors include failure to make available the best standards of care, sometimes refusal by the patient or her relatives to take advantage of the facilities that exist, or possibly ignorance of their importance. Mortality, however, tragic as it is when it occurs, is of relatively low statistical significance. A much more important yardstick whereby to assess the results of maternal care in 1971 is morbidity, both physical and emotional. It is a matter of common sense rather than as the result of any profound research that the best reproductive performance will come if childbearing takes place when a woman is young enough physically and old enough emotionally. The risks in terms of maternal and perinatal health, as well as mortality, rise steeply when childbirth takes place after the age of 35, and indeed a significant rise begins in women over the age of 30. Though physical maturity is achieved at puberty and childbearing may become therefore physically free from risk soon after this date, very few children at this age are emotionally mature and prepared for the responsibilities of parenthood. It is doubtful whether childbearing under the age of 18 is really in the best interests of either the individual or the family or the community at large.

Since 1964 the overall birth rate has been falling steadily, but at the same time the percentage of births, both legitimate and illegitimate, to girls under the age of 20 has been increasing. Though the implementation of the Abortion Act of 1968 has caused a drop in the overall illegitimate birth rate, the rate in girls under 16 actually rose by 200% in the 10 years 1959-69. Further, during the past three years there has been a steady increase in the number of terminations carried out in girls of this age group. Though no figures are available to indicate the number of illegal abortions carried out on girls in the younger age group before the Abortion Act, experience both in Britain and elsewhere indicates that the number was not large and that the rate of illegal abortion was very much higher in older women. This fact suggests an even more significant increase in the conception rate in very young girls during the past few years.

Much emphasis has been placed on the advantages of youth in relation to childbearing. Baird, Hytten, and Thomson (1958) showed that first-pregnancy reproductive efficiency is at its height between the ages of 18 and 20. This is true for all social classes. It is not an unreasonable conclusion, therefore, that the lowering of the average age of the mother when her first baby is born is a beneficial trend. On the other hand, the increasing incidence of pregnancies in girls under this minimal age must be a matter of serious concern to everyone interested in the health of women in this country.

Once pregnancy has occurred an inevitable dilemma presents itself. Termination of pregnancy may seem to many the least harmful procedure under these circumstances. It would, however, be quite irresponsible to disregard the risks, both physical and emotional, involved in this procedure. The immediate physical risks, such as haemorrhage, trauma, and infection, are greater when first pregnancies are terminated in the young. The more remote complications, such as infertility, spontaneous abortion and premature delivery in future pregnancies, vaginal discharge, and menstrual problems, are of far greater consequence to the future health of the individual girls than they are when these complications occur in older women who already have a family. Further, the emotional turmoil created by a pregnancy, whether terminated or allowed to continue, is for obvious reasons far greater in the emotional and relatively unstable circumstances that surround so many of these conceptions in the young than when the problem presents in older women.

There is a very large hiatus in our knowledge about the long-term consequences of unintended pregnancies in the young, and it is of the utmost importance that opportunities should not be lost of studying these problems. The incidence of unplanned pregnancies in this age group, which is clearly increasing, is a matter of the greatest importance to the health of the women of the next generation.

## Improved Facilities

The relationship between social class and reproductive performance as measured by both maternal and perinatal mortality and morbidity is well documented and needs no elaboration here. Better nutrition in childhood and adolescence leads to better physical health by the time the age of reproduction is reached, and this is far more important than nutrition during pregnancy, which has in all probability tended to be overemphasized. Better education and a wider distribution of available services are additional factors responsible for improved reproductive performance. In regard to unpremeditated conception in the young, however, socioeconomic factors and social class have not so far been shown to be of any great significance. Extramaritally conceived pregnancies do, it is true, show geographical variations. There is a higher incidence in urban than in rural areas, in striking contrast to the situation in previous generations. This does not, I think, reflect simply variation in social class but indicates that in the larger urban areas there is a higher percentage of young people living away from home or after conception seeking anonymity and the better facilities for prenatal and intranatal care that are available in the larger cities.

It is often stated that the illegitimacy rate is higher in the lower social classes, but it requires a good deal more research and an analysis of the facts before this can be substantiated. It seems much more likely that in the higher social classes abortion has been very much more readily resorted to in the past and accepted since the introduction of the Abortion Act. Statistics from the various student populations at universities strongly suggest that better education has had relatively little influence on sexual behaviour in the young, and there is some evidence that it may operate in the direction of greater freedom. If the statistics show a higher incidence of illegitimate birth rate in the lower social classes, as they seem to, this does not necessarily indicate a lower extramarital conception rate in the higher social classes.

## Need for Contraception

At the other end of the scale high parity has long been known to carry special risks to both mother and child. Since 1964 the numbers of women having their fourth or more child have been declining steadily. The grand multipara is rapidly disappearing from our maternity wards, and women having their

fifth or later pregnancies now represent less than 7% of the total births. There has been a steady increase in the practice of puerperal sterilization in women of high parity, both in association with caesarean section and after vaginal delivery. In 1969 44% of all terminations in married women in England and Wales were accompanied by sterilization. This has been criticized as increasing the risks of termination, but at any rate it has undoubtedly reduced the risks of high parity. Furthermore, the recent extension of male sterilization when family size has reached the desired maximum is further reducing the incidence of high parity.

These trends are a contribution towards improvement in the health of women, not only by reducing many of the physical disabilities that arise from repeated childbearing but also by reducing the anxieties and tensions associated with the upbringing of very large families with strictly limited material resources. For married women, therefore, the ways to eliminate excessive fertility, with its consequent slow and steady erosion of physical and mental health, have been made clear in our generation. Apart from sterilization as a final means of eliminating all risks of further undesirable pregnancies contraceptive techniques have been improved, especially since the oral contraceptive has become a practical proposition. It is therefore all the more surprising and disappointing that so many unintended pregnancies do in fact occur. Though some of these are due to method failure, most result from failure to use any method of contraception at all, use of an unreliable method, or improper use of a good method. This reflects many deficiencies. It does reflect indeed a lack of services and facilities, but at the same time it reflects a degree of indifference and carelessness, quite apart from ignorance, that is sometimes difficult to comprehend.

Cartwright (1970) concluded from her studies of parents and family planning services that there are three basic reasons why married couples fail to make use of effective methods of contraception: fear of the health risks associated with the "pill," attitudes of some towards birth control, and inadequacy of the services.

In regard to the first, it seems an extraordinary fact that so many women are concerned about the risks of oral contraceptives and are so utterly unconcerned about the risks associated with so many other environmental hazards of today. The risks of driving a motor car or smoking cigarettes in large numbers are two hazards which carry a far greater health risk than the oral contraceptive, and furthermore the mortality from pregnancy is some four times the risk of that involved in avoiding the pregnancy by taking the pill.

There is still a very deep-seated and, some may think, irrational attitude to contraception by many women. This is not confined to the lower social classes or to the uneducated. It is a problem that during a lifetime engaged in the practice of gynaecology I have discussed with hundreds of women, and I still find it difficult to understand some of the reasons for this point of view. I think it is, however, a deep-seated conviction which leads many women to reject birth control.

In regard to the services there is a vital need for a comprehensive contraception service as an integral part of the maternity services and available at all points at which the patient comes in contact with medical and paramedical people involved in health care. This has been stressed often and emphatically, and the advantages of linking a contraceptive service to the maternity services have been shown to produce significant reductions in the rate of unplanned pregnancy. I quote from *Studies in Family Planning* issued by the Population Council:

"A delivery-based family planning programme deals with a population of proved fertility that is clearly identifiable at a time of high motivation, perhaps the highest, hence accessible to information and education, particularly the women of low parity, through a trusted and knowledgeable institutionalized system of care with broad health concerns with a built-in indirect sphere of influence through word of mouth communication out to the community, with optimal chances of follow-up care and continuing services, from the same professional personnel, with healthful consequences for both mother and child and with opportunity for working towards a complete registration system all at reasonable costs calculated against benefits both medical and demographic."

The report on the maternity services approved by the Standing Maternity and Midwifery Advisory Committee of the Central Health Services Council recommended that family planning should be available as an integral part of the maternity services. And yet the Secretary of State is reported as having said that he would regard the provision of a free contraceptive service as part of the National Health Service a gratuitous waste of the taxpayers' money. It is not surprising that gynaecologists as well as general practitioners are getting more and more incensed by the increasing demand that they should recommend and carry out abortions within the Health Service for purely social convenience and yet are prevented from prescribing the drugs and issuing the appliances necessary for effective contraceptive practice as freely within the Health Service as any other drugs and appliances, unless there exists what is called a medical indication. Contraception is now almost universally accepted as an effective preventive measure in relation to the health of women and the artificial dichotomy between medical and social in this context is a complete anachronism. There is a need for better teaching of undergraduate medical students, midwives, and others about the problems and the techniques of family planning. However, to train all available manpower and woman power and to set up the service cannot be done unless funds are made available. Even when the service is provided the need to educate and motivate the public into the acceptance of contraception and a willingness to practise it conscientiously is paramount. At the same time that such great emphasis is being laid upon the need to control the excessive fertility of the female in the interests of the health of the mother of the family and in order to make some reduction in the rate of growth of the world population, we encounter an almost Gilbertian paradox whereby medical scientific technology has now achieved nine fetuses in a woman's uterus. This is to the apparent satisfaction of both mother and doctor, who would have been even more satisfied if all nine had lived instead of perishing. Society might well question the sanity of such endeavours and ask how far the sometimes ephemeral and frequently labile "wants" of an individual woman in relation to a pregnancy should be the major factor in determining therapy.

## Change in Sexual Behaviour

But what of the young, and what of the unmarried? That the sexual behaviour of the young female has changed in the last generation there can be little doubt. What I think is in doubt is whether this trend is ultimately for the benefit of either the physical or the mental health of the next generation of women. Michael Schofield (1965) reported on the sexual behaviour of young people and showed that the percentage admitting to premartial sexual intercourse was much lower than might have been expected. Though there is no documented evidence it is highly probable that this percentage is greater in 1971 than it was in 1965. This is not the time or the place to discuss morality, vital as this is in our society today, but even leaving that aside it is very much open to question whether the health and subsequent welfare of individual girls is improved by a greater degree of promiscuous sexual freedom in the early postpuberty period of their lives. It is often stated that the pill has done a great deal to emancipate women in this regard. If this is so how does it come about that 70% of unmarried girls who seek abortion have not used contraception when they become pregnant? This is not a question of contraceptive failure, it is not a question of contraceptive ignorance, and in many instances it is not a question of contraceptive avail-

ability. The reasons are very complex, but they reflect a profound difference in the sexes.

It is currently popular to speak of stable relationships in the young, even as young as 14 or 15, but when a pregnancy occurs how stable are these relationships? Sometimes they lead to marriage at a very early age. More often they lead to disruption of the relationship, which rapidly disintegrates. If they appear to be stable and marriage ensues, how long does that marriage last? What contribution do they make to the increasing divorce rate, with all the emotional and psychological trauma that goes with it?

The effects of illegitimacy have been studied many times in relation to its effect on the child. Illegitimate children compare unfavourably with children brought up in a happy and stable home, but how do they compare with children that have been left with only one parent following early divorce? And further within one of these so-called stable relationships, if and when a pregnancy occurs and an abortion is carried out, how often does the relationship break up and the female become much more deeply and permanently disturbed emotionally and psychologically by the experience? These and so many other questions need answers, but they are of the utmost importance to the health of the next generation of women.

It was undoubtedly in part at any rate because of this rising incidence of unplanned pregnancies in both married and unmarried women that the public has come to favour the liberalization of abortion. However, even its most ardent supporters accept that it is only a second best to the prevention of pregnancy if such is not desired. Why is this so? Essentially because surgical interruption of a pregnancy causes not only physical trauma but emotional trauma, and the younger the woman the greater the risk. I suspect that many of these young women have found a freedom that they are anxious to exploit, but for the consequences of which they are not prepared to accept full responsibility. The emancipated woman of 1971 has no need to take refuge in pleas of seduction—she is a willing partner in most instances—and unhappily it is a matter of both common sense and factual experience that the availability of a way out—namely, abortion—makes so many less responsible in their use of their new found sexual freedom.

In 1971 the relative safety of childbearing is a monument to medical research, social progress, and improved standards of care for all women. At this time the fetus can be monitored and its progress during intrauterine life recorded with far greater accuracy than ever before, with a view to its ultimate well-being after birth. And yet at this very time pregnancies are being more irresponsibly conceived and healthy fetuses more wantonly destroyed than ever before. It is an ironical and disheartening prospect for those most intimately concerned with the health of women. It will require immense health education endeavour to popularize contraception so long as abortion is easily obtained and thought by the public to be safe. This applies particularly to the young.

## Environmental Influence

The changing sexual mores of the teenage female today is, like most other social habits, dictated by custom, by fashion, and by a host of other environmental influences, and like most other factors which affect social habits will be subject to changing climates of opinion. The fact that the average girl passes today through the physical and emotional problems of puberty and adolescence with far less trauma than previous generations is on the credit side. But a more responsible attitude to relationships with the opposite sex is often sadly lacking. I should also mention one other facet of this problem seriously affecting the health of women—namely, the steadily rising incidence of venereal diseases. Though these diseases tend to affect older men and women the fact is that in girls between the ages of 16 and 19 there has been a far more rapid increase than there has been in boys of the same age. Over the age of 25 three times as many men suffer from venereal infection as women. In the younger age group more cases of gonorrhoea in girls were recorded last year than in boys.

If we move to the other end of the reproductive era the menopause is an inevitable physiological landmark in every woman's life. Modern medical knowledge has enabled us to understand more about the reasons for the occurrence of unpleasant symptoms and the means whereby they can be alleviated. It is, however, an oversimplification to attribute all the physical and emotional symptoms entirely to an oestrogen deficiency. In menopausal women and later endogenous oestrogen production varies greatly. Furthermore there is a danger of attributing symptoms which may develop at this time of life to the menopause, and frequently both physical and psychological investigations are omitted. If the symptoms from which the patient is suffering are shown definitely to be due to an oestrogen deficiency they respond dramatically to therapy, but the question arises of how long this should be administered.

In an endeavour to prolong what is often referred to as femininity on a for-ever basis there are inherent dangers in trying to graft the sexual behaviour of a young woman on to the body of an ageing one, and both the physical and emotional repercussions may not always be beneficial to the woman's health. There is need here for sound and thorough clinical judgement in the management of a common problem and to remember that there may be a multiplicity of additional emotional, metabolic, and neurological factors as well as the simple hormone one.

## Incidence of Cancer

Finally, I should like to mention another aspect of the health of women which is causing much concern. In the past 10 years there has been an actual increase in the total deaths from cancer in women by more than 10%. Cancers of the genital tract, if you include the breast, represent nearly 40% of these deaths. Even allowing for some increase in population over that period and its greater longevity these figures represent a depressing picture. They are all the more surprising as we know more about the factors causing cancer and the means available for their ealier detection, and better methods of treatment are available than ever before. In the Annual Report on the Treatment of Genital Cancers, in which figures are drawn from leading institutions throughout the world, Kottmeier (1967) and his collaborators showed an improvement in the five-year survival rate in cases of cancer of the cervix treated between 1956 and 1960 compared with those treated between 1941 and 1945 of some 20%. This occurred in spite of the fact that the distribution of the cases recorded between the four stages of this disease had changed hardly at all.

Genital cancers vary widely in their incidence in different countries and sometimes in different areas within a single country. For example, cervical cancer in Great Britain has an incidence of about one-third that of India. On the other hand, cancer of the body of the uterus is 10 times more common in England than in India. While the incidence of cervical cancer seems to be falling, that of cancer of the body and also of the ovary are apparently increasing. It has long been known that cervical cancer is directly related to the socioeconomic status of the community. For example, Baird (1965) showed that the incidence of cervical cancer was 20 times greater in women of social class V than in the wives of professional men.

The relationship of cervical cancer and the age at which coitus starts and the number of sexual partners a woman has is now well documented. It will therefore be a matter of great interest to see how the pattern of this disease changes in the coming years. Fortunately the means to reduce the

incidence of clinical cancer are available, but once more problems of educating the public present themselves. Screening programmes on a national scale to detect early or preclinical cancer are fraught with difficulties. Out of a total of some 15 million women in this country between the ages of 15 and 65 fewer than 2 million submitted themselves for cervical smears last year. Further, half of the tests that were carried out were performed on women under the age of 35, though the age of maximum risk is over the age of 35. The success of screening programmes depends on the facilities available and the efficiency and accuracy of any screening procedures, but of equal importance is the motivation of the patients at risk to come forward for examination.

Cancer of the body of the uterus is becoming more frequent. Why is this? It is a disease of older women, and women are living longer. But this is not the only factor. There is a relationship between this disease and obesity and diabetes, both of which are also increasing in an affluent society. The exact relationship between this disease and oestrogens is not fully understood, but that there is such a relationship seems highly probable. Future research may show the part which progestogens may play, not only in the treatment of benign hyperplasia but by its successful treatment they may have a role in the future prevention of malignant change. We therefore have a situation in which improvement in the standards of living and better education may be reducing the incidence of one disease while causing an increase in the incidence of another.

## Conclusion

The whole of our medical service has been geared towards curative medicine, and the whole of medical education is designed to produce a doctor more capable of treating disease than in preventing it. Our profession is frequently criticized for this attitude. But does not the relative indifference of the public to preventive measures reflect the same attitude, and is it not true that it is vastly easier to obtain finance whether from public or private sources to develop treatment and research rather than to publicize methods of prevention? Cancer research is oversubscribed, cancer education almost entirely unfunded. The efforts required by both educator and the person to be educated in order to promote health needs are not easily obtained. To do something or not to do something in order to prevent the development of a disease or a disorder in the future requires the sort of motivation that few people have instinctively and a great many actively resist. When the Royal College of Physicians recently published its second report on the harmful effects to health of smoking cigarettes, there appeared a leading article in at least one newspaper denouncing the arrogant doctors for daring to tell the public how they should order their lives. Unless there is a radical change of attitude on the part of both the profession and the public in this area, progress towards a healthier population must remain inevitably slow.

## References

Baird, D., Hytten, F. E., and Thomson, A. M. (1958). *Journal of Obstetrics and Gynaecology of the British Commonwealth*, **65**, 865.
Baird, D. (1965). *Journal of Obstetrics and Gynaecology of the British Commonwealth*, **72**, 139.
Cartwright, A. (1970). *Parents and Family Planning Services*, p. 216. London, Routledge and Kegan Paul.
Kottmeier, Hans (1967). *Annual Report on Treatment of Carcinoma of Uterus and Vagina*, p. 390. Stockholm, Kungl Boktryckeriet.
Schofield, M. (1965). *The Sexual Behaviour of Young People*. London, Longmans Green.

# Clinical Evaluation of a Rosette Inhibition Test in Renal Allotransplantation

A. MUNRO, M. BEWICK, L. MANUEL, J. S. CAMERON, F. G. ELLIS, M. BOULTON-JONES, C. S. OGG

*British Medical Journal*, 1971, **3**, 271–275

## Summary

**The formation of spontaneous rosettes by peripheral blood or spleen mononuclear cells when incubated with sheep red blood cells has proved a useful way of assessing the potency of immunosuppressive drugs and antilymphocyte sera in vitro. A test employing the inhibition by antilymphocyte globulin (A.L.G.) of spontaneous rosette formation around peripheral blood mononuclear cells is described. This has been used to assess the degree of immunosuppression in patients with renal allografts and uraemic patients on regular haemodialysis.**

**Twenty-three patients with renal allografts had 21 clinically diagnosed episodes of rejection. In none of these rejection episodes was the minimal inhibitory concentration (M.I.C.) of A.L.G. (that necessary to reduce the spontaneous rosette formation of peripheral cells by 75%) less than 1/50,000. Nineteen patients had no rejection episodes during 57 patient/months of continuous observation while the M.I.C. was at a greater dilution than 1/50,000. The test has therefore been of great value in suggesting when an individual is capable of rejecting his graft, and allows the dose of immunosuppressive drugs to be adjusted to a minimum in a controlled fashion. It has been of use in diagnosing rejection in the anuric patient, when the distinction between rejection, urinary tract obstruction, and infection is particularly difficult.**

**Fifteen patients maintained on regular haemodialysis for more than a year had, as judged by this technique, less reactive lymphocytes than normal healthy controls. The degree of immunosuppression was not as great as in the patients on full immunosuppressive regimens.**

**Guy's Hospital, London S.E.1**
A. MUNRO, B.SC., Research Technician, Department of Surgery
M. BEWICK, F.R.C.S., Senior Lecturer, Department of Surgery
L. MANUEL, Technician, Department of Surgery
J. S. CAMERON, M.D., F.R.C.S., Consultant Physician
F. G. ELLIS, M.S., F.R.C.S., Consultant Surgeon
M. BOULTON-JONES, M.B., M.R.C.P., Senior Medical Registrar
C. S. OGG, M.D., M.R.C.P., Renal Physician