place much reliance on comparative infection rates from different hospitals because of differences in methods of treatment and in prevalent strains of bacteria. These are by no means the only variables. We have been studying wound infections at this hospital for the past two years and have carried out continuous monitoring of all infections for over a year. An initial difficulty was to define what constitutes a wound infection. When a wound discharges pus from which a pathogenic organism is grown the diagnosis is self-evident; but how are we to define the case with some redness about the wound and mild swelling due to infection or might be simply due to operative trauma and tight stitches? How do we assess the case where a wound exudes a bead of serum from which pathogens are cultured in small numbers but the wound shows no other clinical evidence of infection? In our study we are classifying wounds into six grades of presumed infection but for practical purposes it will be grouped into those which, while showing evidence of infection, do not delay the patient’s progress in any way and those which retard the patient’s recovery, however slightly. The latter group makes up the total.

It is also necessary to be clear, in recording the proportion of cases becoming septic as a percentage of operations performed, to what total figure the percentage refers. If one simply takes as a starting figure the total number of operations in the theatre operations’ book, excluding only those carried out for septic conditions such as abscesses, the percentage may look very flattering. But it is also necessary to eliminate cases, such as manipulations under anaesthesia, in which no possibility of wound sepsis arises, translittipectomies, in which the operative field is in any case not sterile and superadded infection may be impossible to define, and various other categories. The important figure is the proportion of “clean” cutting operations which become infected, excluding those which are at risk because the operation was through a previous, potentially infected, scar or involved opening a non-sterile hollow viscus. This percentage gives the true index of iatrogenic infection.

This military general hospital contains both modern cubicalized and open wards, and our preliminary figures support the contention of O’Riordan, 1 that which we believe is an important predisposing factor in wound infection. Another point suggested by our figures is that while the infection rate in “clean” cases shows no correlation with the total number of surgical admissions or total number of operations per month there is a positive correlation with the number of septis cases admitted to the hospital—despite the fact that the majority of these, compartmented to a separate ward remote from the rest of the surgical section of the hospital and are operated on in a theatre which is not used for “clean” cases. It may not be shown to achieve maximum safety from infection in procedures, such as total hip joint replacement, where the risk of sepsis is particularly serious, it is necessary to admit all surgical cases to the HDU. Wound infections under any circumstances accept a septic case.

You mentioned the problem of late deep infections in total hip replacement and noted that you have studied these due to Staphylococcus aureus. An interesting point was made by Mr. O’Conner which may not be found to be due to coagulate-negative Staph. albus, previously regarded as a usually harmless skin commensal. This and many other anomalies will need prolonged and detailed study before we can sort out the really important factors in infection control from useless but time-honoured shibboleths. We have finally continued our studies at Haslar over a period of years in the hope of throwing light on some of these problems.

B. V. JONES
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Fibrocystic Disease of the Pancreas and Crohn’s Disease

Sir,—The case we report here appears to be the first published report of the coexistence of fibrocystic disease of the pancreas and regional enteritis in a child.

The patient, a 7-year-old girl, was admitted when new born to the Hospital for Sick Children, Great Ormond Street, London, with signs of intestinal obstruction. There was an ileostomy with inapected meconium proximal to the obstruction. A resection of small bowel was performed, with end-to-side anastomosis and ileostomy. The patient made a good recovery, the ileostomy was closed, and further attendance at the Harold Wood Hospital, Essex, where the diagnosis of cystic fibrosis of the pancreas was made, the sweat test showing a level of 137 mm/E1. of NaCl.

Seven years later, in June 1968, she attended Stobhill General Hospital, Glasgow, for follow-up examination. She was dehydrated and was taking 3 g of pancreatic daily with supplemental vitamins. In 1970 she complained of rectal bleeding of some weeks duration. Examination showed a small anal fissure which was treated conservatively. In January 1971 she had lost weight and there was clubbing of the fingers. The anal fissure persisted and she also complained of frequent, loose bowel movements.

The descending colon was thickened and tender to palpation, and the fissure was enhanced by digital manipulation.

Our thanks are due to Mr. J. C. Grant and Dr. I. D. Reilly, Stobhill General Hospital, for permission to report this case, and to Dr. T. J. Thomson and Mr. G. Gillespie, Stobhill General Hospital, for help in preparation.—We are, etc.

J. O’CONNOR
Stobhill General Hospital, Glasgow
3 Hobbs, J. B., and Hine, G. W., Lancet 1964, 2, 47.
4 J. R. British Journal of Hospital Medicine, 1970, 5, 669.
7 Burritt, R. J., Thompson, W. T., and Williams, J. A., Gut, 1971, 12, 11.

Pancratitis and Basal Embaypnes

Sir.—Deficiency of the enzyme α-antitrypsin is known to be associated with a severe form of basal emphysema. It has been postulated that lung damage is due to the unopposed action of trypsin or other proteolytic enzymes circulating in the blood. It is impossible to prove this hypothesis in man, but it would receive some support if basal emphysema were to occur in patients with raised blood levels of digestive enzymes, as in chronic relapsing pancreatitis. We now report such a case in the hope that others will be encouraged to look for further examples.

The patient was a 30-year-old man, a lifelong non-smoker, who was admitted to a nursing home in March 1970 with fever, shortness of breath, constipation, and severe pain in the upper abdominal pains of several days’ duration. The pain was made worse by lying on his left side and was relieved by sitting upright. There was no history of dyspepsia when hurrying over rough ground, but otherwise he had previously been in good health without respiratory symptoms. He was well enough to be discharged after one week, but on his return home he complained of an...
increase in effort dyspnoea and a persistent aching pain in the left upper abdomen.

In April 1970 a firm, rounded tumour was felt in the left hypochondrium and barium-meal study showed a deformity of the lower end of the cardiac segment of the stomach, which had become almost imperceptible.

This cyst was opened into the posterior wall of the stomach and postoperative progress was uneventful. The gall bladder contained stones and was removed at a later operation.

During the next 18 months the patient had three further attacks of acute upper abdominal pain, each necessitating hospital admission. The serum amylase activity was measured on 12 occasions, both during and between these attacks, and was invariably raised to between 200 and 1200 Somogyi units/100 ml, with a mean value of 383 units/100 ml. The serum level of α1-antitrypsin was measured on two separate occasions between the attacks and was raised at 651 and 650 mg/100 ml respectively (normal range 200-400 mg/100 ml). The tryptic activity of the serum was also significantly increased.

Throughout the period of this illness, from March 1970 until September 1971, the patient complained of increasing effort dyspnoea; latterly he was breathless undressing or drying after a bath, but with minimal cough or sputum. Clinically there was wheezing on forced expiration, and serial chest radiographs and bronchoscopy showed increased transradiancy at the lung bases with bulla formation, flattening of the diaphragm, and characteristic broad linear opacities at the midzones and bases. A technetium scan showed diminished perfusion at both lung bases but no separate focal defects. There were no symptoms or signs in the legs, haemoptysis, pleuritic pain, enzyme changes, abnormalities in serum electrocardiograms, or other evidence of pulmonary thromboembolism. Lung function tests in July 1971 showed the characteristic changes of emphysema, with obstructive impairment of ventilatory capacity (FEV1, %—44) not improved by adrenaline, increased residual volume (3:8 l), reduced transfer factor (14 ml/mm Hg/min), and reduced arterial oxygen saturation.

One year before, the ventilatory capacity had fallen from 2:7 to 1:6 l, the FEV1, from 1:2 to 0:8 l, and the maximum voluntary ventilation from 40 l/min to 28 l/min; by then the patient was almost completely incapacitated by dyspnoea.

—We are, etc.,

COLIN M. OGLIVIE
E. W. PARRY
Broadgreen Hospital, Liverpool

G. H. MURRAY
Watson Hospital, Liverpool

General Practice Observes

Sir,—I would like to join Dr. J. P. Neasham (28 October, p. 237) in his scepticism of the value of vocational training schemes for general practice. There is no doubt that they have enabled minor specialties to be staffed, but what the individual derives is the experience of hospital-based treatment of disease. What the doctor enters general practice requires to know is related to primary diagnosis outside hospital—together with better opportunities for assessing social and environmental factors in relation to the patients seen at primary care.

If progress is to be made in the integration of medical services and a more satisfying career created, surely greater incentives for encouraging doctors to acquire a special skill which would enable them to play a useful role in hospital. The smattering of knowledge of different specialties acquired in vocational schemes is no more than a reinforcement of the undergraduate training, which is already too hospital-oriented. As a student one will have spent years exploring hospital departments, frustrated at the lack of opportunity for practical involvement in patient management. This frustration is soon resolved when, as a house officer, he finds that practical involvement means that he is working 100 hours per week. The time is long overdue for reassessment of the pre-registration training of doctors, whatever the G.M.C. will usefully be employed for such a cause.

With the trend towards completion of exams in the fifth year steps should be taken to integrate the sixth year and the year in residence to make a two-year period in which broader practical hospital experience and general practice experience should be obtained. As an effective educational element—I am, etc.,

IVAN C. F. WISELY
Aberdeen

Oral Contraceptives and Serum Amylase

Sir,—Dr. H. Adlercreutz and others (26 August, p. 529) have observed an increased serum α-amylase activity in young women in Finland receiving oral contraceptives. In a study of plasma amylase levels in this country, using identical methodology, we have not observed a similar elevation.

Fasting plasma amylase levels were measured on 47 women taking oral contraceptives (syrup) through the courtesy of Prof. V. Wynn). All were clinically well and without previous history of liver disease; their ages ranged from 21 to 37 years, most being in the early 20s. They had been taking a wide variety of oral contraceptives for at least six months and were receiving no other drug therapy. The mean plasma amylase value at 37°C was 143 ± 35 (S.D.) U/l. The highest value recorded was 529 and only two women gave values above 200 U/l. It was not possible to obtain a comparable drug-free control group, but these values are well within the accepted normal limits for this method and were similar to that observed in Dr. Adlercreutz's male control subjects.

The reported incidence of enzyme abnormalities in patients receiving oral contraceptives appears to be especially high in Scandinavian countries and may reflect a special susceptibility of this population group. In addition, it is likely that the choice and dosage of contraceptive drugs differs from country to country. Our data suggest that significant α-amylase elevation as a result of long-term oral contraceptive administration is not a usual finding in England.—We are, etc.,

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D. TARLOW
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Haemoglobin and Serum Lipids

Sir,—In the paper by Professors L. E. Böttiger and L. A. Carlson (23 September, p. 731) the statement is made that "the possible correlation between haemoglobin and serum lipid values may have implications also for the development of coronary heart disease . . ."

Supposedly the data reported in the study provide the basis for this statement. However, this is not a correct inference from the data. It is reasoned by the authors that since a relationship has been found between haemoglobin levels and coronary heart disease and between serum lipid levels and coronary heart disease, the relationship between haemoglobin and serum lipid levels should exist. Two factors, each related to coronary heart disease, should be related to each other.

What is really in the oatmeal is that the data do not bear out the hypothesis which the authors set out to prove. In the process of attempting to prove the relationship a serious misuse of statistics has taken place. Correlation coefficients as low as 0.062 (between haemoglobin and cholesterol for men aged 20-54 years) are reported as statistically significant (P<0.05). The magic F is not. A correlation coefficient of 0.062 means that approximately 0.4% (from the square of the correlation coefficient) of the variability in the cholesterol level is explained by the variability in haemoglobin level. Or, put another way, 99.6% of the variability in plasma cholesterol is left unexplained in this correlation. The reason why such a small number was found is that the correlation coefficient is significantly different from zero was the large sample size (n=1,190). If we take a large enough sample, any correlation, no matter how small, will be significantly different from zero.

The difference between medical significance and statistical significance is very clearly brought out in this case. It is curious that statisticians seem to be more aware of this difference than do physicians.—I am, etc.,

ALEX MILLER
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Warner-Lambert Research Institute, Morris Plains, New Jersey

Short-term Service Abroad

Sir,—I am writing to you in the hope of contacting doctors who would like to help in developing countries, but who cannot spare the time for a full tour (18 months to two years). The help that can be given in a shorter term is obviously limited to a certain degree by lack of local knowledge, tropical medicine, and language. These disadvantages are minor, however, when compared with the amount a man can achieve when working with an experienced team.

The short-term worker is most useful in relieving the permanent staff during furlough periods. Many hospital staff are unable to get away because of lack of temporary arrangements. The advantages to the doctor who makes the trip are manifold. To quote from a letter which is representative of many parts of the developing world, "there is an unlimited opportunity of service, and also great scope for gaining experience in all aspects of practice. The field for research is wide open. Our commonest diseases include childhood malnutrition and tuberculosis in all its forms." The doctor will have an adventure and a chance to widen his whole experience of life; often with only common sense as an ally he will be able to make a real contribution to the country previously he had thought he was ignorant.