genuine intra-abdominal disease in the presence of diabetic ketoacidosis was more likely in patients over 40 years of age. There was no correlation between the presence of intra-abdominal disease and the concentration of blood sugar or the degree of dehydration. Furthermore, they concluded that pain caused by metabolic decompensation should resolve after a few hours of rehydration and treatment with insulin.

A search of the recent papers published in English showed only one brief mention of the combination of diabetic ketoacidosis and ectopic pregnancy.[4] Analysis of the incidence of ectopic pregnancy and of new presentations of insulin dependent diabetes mellitus indicates that the expected number of cases of these two conditions presenting together is about 1·6 cases a year in the nine million women of reproductive age in the United Kingdom.[5 6]

We present this rare case to show some of the practical difficulties of achieving an early diagnosis of underlying abdominal disease coinciding with diabetic ketoacidosis. The poor history available in a semicomatose patient is likely to make accurate diagnosis more difficult. The single most suspicious abdominal finding on admission in this case was the totally silent abdomen on auscultation, and though generalised tenderness tends to favour metabolic decompensation as the only cause of abdominal pain, a late presentation of genuine disease may well have progressed beyond the stage of localised tenderness. Few laboratory tests are helpful in achieving the correct diagnosis, but a low haemoglobin concentration in a severely dehydrated patient is a sinister finding and the importance of the degree of acidosis as measured by plasma bicarbonate concentration has been mentioned above. Finally, emphasis must be placed on the need for a high index of suspicion initially and for continuing reassessment of the history and abdominal findings during the early period when fluid and insulin treatment improve the patient's level of consciousness.

We thank Dr S A Tomlinson for allowing us to report a case under her care.

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Medicine in Eastern Europe

JAN BROD

After the second world war the political and economic structures of the countries of eastern and south eastern Europe were built on the model of the Soviet Union, the slogan "Soviet Union is our example" being applied also to medicine. Over 50 years ago the Russian Semaško[1] proclaimed the principles on which the state medical services were to be based: state ownership of all the hospitals, medical institutions, spas, pharmacies, medical staff, pharmaceutical factories; integration of medical institutions and services into the economic plan; freedom from charges; and general availability and accessibility of all the health services.

These principles, together with the centralisation of the Soviet economy, led to the Orwellian idea of having the whole population not only medically registered but also regularly examined. The aim was to study the connections between environment, occupation, and the health of an individual—the so called dispensarisation.

Hanover, West Germany
JAN BROD, MD, professor of medicine

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Soviet Union

The health problems of this vast country, with her irregular density of population, extremes of climate, and ethnic, cultural and religious differences, are tremendous. Historically there has been a huge gap in the standard of medical care between the cities and the countryside, with its poor hygiene, poor sanitation, epidemics, prejudices, and high infant mortality.

Although the numbers of doctors qualifying have increased greatly since the war and now total 950 000 (a quarter of the doctors in the world),[2] the medical problems of the countryside could not be mastered without *feltchars*. The name comes from the German feldscher, who in the Prussian army of the eighteenth century was the aid to the military doctor. In Germany this function has disappeared, but it persists in the developing countries and in the Soviet Union. The feltchars' education lasts two and a half to three years and consists of medicine, surgery, obstetrics, paediatrics, and also philosophy and scientific atheism, history, literature, socialism, and sports. They are expected to take an active part in politicosocial activity and to spend their free time in building roads, working on farms, and so on. Those who pass the final state exam with honours may be admitted immediately to a medical school; the others have to spend three years in practice. Although the feltchar is supposed to work under medical supervision, this is often not feasible. They are responsible for hygiene, sanitation,

vaccination, keeping *x* ray files, supervising therapy, and health education.[3-5] Perhaps this is the justification for their atheist education, since religion is blamed in the Russian medical press for fatalism and various prejudices that hamper the care of the sick and children.

POLYCLINICS

The basic medical unit in the system is the polyclinic, which provides health care for a population of 20 000 to 30 000 or rather more in large cities. In Leningrad in 1970, for example, there were 79 polyclinics for a population of 4 000 000. Every polyclinic should have at least four specialists: a "therapeut" (medical specialist), a surgeon, a paediatrician, and a gynaecologist and obstetrician, but other specialties may also be represented. Patients may come direct to the specialists or be referred by the area doctors (the area having some 2000 to 3000 inhabitants), who should fulfil the function of the general practitioner. That in most cases they do not is due to several factors: their areas are often up to 10 times the size they should be, they earn less than the average Soviet citizen (in 1977 99 roubles, equivalent to about £80 a month; a factory worker earned 135 roubles); they have to manage their areas on foot or using public transport; and their opportunities for further education are limited.[6] As a result there are many vacancies for area doctors and a high turnover: one third of them leave after one year and less than 10% of them stick it out for more than 10 years.

If the situation is unsatisfactory at the "ambulatoria" of area doctors there are also many defects in the polyclinics. Worse than the lack of medicines, syringes, ophthalmoscopes, laryngoscopes, and microscopes[7] is the inefficiency, slackness, and rudeness of the medical staff. For example, the inhabitants of Jaroslavl (some 150 miles north east of Moscow) complained about the behaviour of the staff of their polyclinic, chaotic records, long waiting times, misleading information on surgery times, and dirt in the corridors and waiting rooms. To improve things medical propaganda posters were displayed in the corridors, an annual lecture for the staff about medical behaviour and ethics was introduced, and instructions were given that if a conflict threatened the chief consultant or administrator had to be called so that complaints could be converted into "suggestions for improvement."[8]

Many of these deficiencies persist, however. In 1981 a report from Brežňev mentioned failure to fulfil plans for constructing new hospitals, the indifference of medical staff to the complaints of their patients; and he reproached those responsible for not encouraging the patients to demand their rights in the same way as in the Western democratic countries.[9]

HOSPITALS

In 1970 in Leningrad 30% of the polyclinics were attached to a hospital. It is planned that all polyclinics should be linked to hospitals.[10] In towns with 40 000 to 60 000 inhabitants the medical staff should comprise a general practitioner, physician, surgeon, obstetrician, traumatologist, and a specialist in ear, nose, and throat diseases. Polyclinics in towns up to 120 000 should be attached to a hospital of over 500 beds with additional specialties such as urology, orthopaedics, endocrinology, and physiotherapy. In the capitals of the republics the hospitals should also include ophthalmology, haematology, cardiology, and nephrology. Hospitals of the fourth grade are interregional centres for burns, cardiovascular surgery, etc, and finally, hospitals of the fifth grade are attached to the central research institutes, mostly in Moscow.

The number of the hospital beds has steadily increased over the past 25 years, and in 1974 there were three million hospital beds—11·58 beds/1000 inhabitants. Since 1970 emergency stations have rapidly developed in polyclinics and hospitals; in 1974 there were 3700 such units and 44 specialised hospitals for emergency care employing 2600 doctors and 52 000 nurses.[11] There are also specialised ambulances with teams of specialists —for example, for coronary thrombosis, shock, poisoning, etc.

The Far East poses special problems with its great distances and poor hygiene. Efficient first aid has to be brought to the patient, and teams of specialists travel by specially equipped ambulances or by planes from the nearest civil base.[12]

DISPENSARISATION AND PREVENTION

The ambulatoria and polyclinics also run the dispensarisation. This derives its meaning from *dispensatio*—that is, "economical management, charge, superintendence." The aim is to supervise a group of the population particularly at risk of a certain disease, to apply preventive measures, recognise the disease at its earliest stage, and give the patient the most effective aftercare, so that his working ability is quickly restored. The diseases covered are tuberculosis, hypertension, tumours, various chronic diseases, and war injuries; people working in dangerous occupations also come under the scheme.

Throughout the country in 1974 100 million people were registered and 30 million came under this scheme, of whom 6 million were children. Nevertheless, only half of the known hypertensive patients came under the scheme, and many women avoided regular attendances.[11 13] The aims and outcome of the scheme are therefore being researched in 350 000 inhabitants of Moscow. Those who could profit from regular surveillance will be identified and compared with a control group which has not had the benefit of dispensarisation.

The major problems facing Soviet medicine are now those of other industrialised nations—diseases of the cardiovascular system, tumours, traffic and industrial accidents, neuroses and mental disorders. Mental disorders are defined as anything deviating from normal behaviour, and the term "normal" is very narrowly interpreted. Thus, anybody who reacts differently to the problems of everyday life, or who protests against the regime, may be labelled "abnormal" and be detained for treatment in a psychiatric hospital.[14] Alcoholism is a major evil, but drug abuse is less widespread than in the West; an inclination to narcomania is liable to be punished by 5 to 15 years' imprisonment.

An important feature of preventive care is the *prophylactoria*. These are attached to factories and enable workmen to be treated while continuing to work. Mines are supposed to have 20 places per 1000 workers, steel factories and oil refineries 15. For each period of 24 days patients with a particular disease are selected. They have a fixed programme of working, treatment (mud baths, heat, phototherapy, gymnastics, inhalations), sports, cultural events, and excursions. They attend lectures on hygiene, nutrition, and preventive medicine. Stress is avoided, and shouting, slamming of doors, etc, are prohibited. It is stated that 90% of the patients are discharged improved; their absence from work is said to be reduced by 30-40%.[15]

THE YOUNG AND THE OLD

Because of frighteningly high infant mortality in the past maternity clinics have been founded all over the country together with prophylactoria for pathological pregnancies. There is no longer a need for home deliveries.[7] Throughout pregnancy women are supervised by maternity clinics, where they are also instructed about their personal hygiene and baby care. In Moscow alone there are eight special departments for premature babies. All this has reduced infant mortality to 25-26/1000. A central research institute for mother and child has been founded in Moscow.

The situation is worse at the other end of life. There are only a few homes for old people and, unlike the West, the tendency of the Soviet Union is to aim at delaying the process

of aging. Within the past 50 years average life expectancy has risen from 32 to 70 years. A research program has been planned to push the limit of biological aging to 90 years.[16]

RESEARCH AND TEACHING

Research in Russia and the Soviet Union has a long tradition, but the lack of contact with the rest of the world since the second world war has led to an infertile "Pavlovism" and lack of criticism. This is made worse by the fact that foreign medical articles are accessible only in brief Russian abstracts, Russian scientists are seldom allowed to attend international meetings, and their manuscripts do not pass the tough editorial process of the Western medical journals. This is the more regrettable, as medical research has high moral and financial support. Like everything else it is organised and centrally coordinated by the Soviet Academy of Medical Sciences in cooperation with the scientific council of the Federal Ministry of Health in Moscow.[17]

Isolation from the rest of the world is felt most acutely in pharmacological research. It takes on average seven years before a drug discovered in the Soviet research laboratories passes the administrative route from the Ministry of Health through the committee of specialists and through the research institutes which conduct trials.[18-20] Twenty years ago the Academician Hiller from Riga complained that since the beginning of the Soviet Union not a single new drug from Soviet laboratories had penetrated the international market. The difficulty rests not only with the industry but also with the system of distribution. A drug may be unavailable for many months only to flood the market suddenly towards the end of the year and become spoiled through long storage. Simple drugs such as nitrites, mustard plaster, and vitamin C may not be available for months. Patients or their relatives therefore often have to travel from town to town to obtain the necessary medicine, and a black market flourishes.[21]

There are 83 medical schools and faculties in the Soviet Union. Immediately after the first two clinical years education becomes specialised, and schools provide training in therapeutics, paediatrics, hygiene, dentistry, or pharmacology. Newly qualified doctors are then directed to posts during their first three years, which helps to overcome the uneven distribution of doctors throughout the country.[7] There are 12 institutes for postgraduate education, which is free but not easily accessible.[7]

About eight per cent of the medical students are selected for a career in research. They undergo a tough training under a senior research worker, and have to defend their eventual thesis in public against two opponents. If successful, the author is granted the title "candidate of sciences." After having worked for some 10 years and having published a major piece of research he may submit it to the Academy of Sciences; if his work gains the approval of two appointed opponents he will be granted the title "doctor of sciences." These grades are prerequisites for university posts of reader or professor and leading posts in the research institutes. Although many of the institutes are (or were until recently) in inadequate premises, they are well equipped and staffed and through their leading investigators keep the window ajar to the outside world of science.

The health services and medical research of the other countries of the eastern bloc are organised as in the Soviet Union, yet they have different origins and face different problems.

German Democratic Republic

In 1947 state medicine was already beginning to be introduced when the first polyclinics were established by the order of the occupying Russian Army. At first private practice flourished, but now there are virtually no private doctors. Immediately after the war the shortage of doctors was considerable and many unemployed doctors from West Germany came to fill the vacancies, leaving their families behind but rejoining them when their economic position had improved. Meanwhile the number of doctors had risen to 1 per 528 inhabitants in 1977. There are six medical schools, several medical academies, and the academy for postgraduate training in Berlin-Lichtenberg. All medical services including medicines and drugs are free and patients can choose their doctor. Through improving the quality of the medical services the state tries to persuade its citizens about the superiority of the socialist system.[22]

In agriculture women who have given birth to their second baby are granted one year's paid leave.[23] This, together with medical care has certainly helped to reduce the infant mortality to 12·9/1000 in 1980. Great effort is being made to improve the conditions of the aged. In 1977 there were 104 000 places for old people in old age homes (Feierabendheim) and this number should increase by 18 000 in 1985. The outpatient care for the mentally ill is unsatisfactory because of conflicting views about the concept of mental illness.[24] Until recently every medical scientific meeting was introduced by a lecture on some aspects of Marxism-Leninism, this being declared the basis of all sciences. Nevertheless, in spite of more than 30 years' daily political indoctrination, the *Neues Deutschland* in 1983 complained that leading doctors misunderstood their political task,[25] and in 1980 the general practitioner was warned not to be arrogant, that the medical examination should not take the form of a political interrogation, and that when talking to the patient he should "look him in the eye."

Czechoslovakia

With no less orthodoxy, Czechoslovakia tried to take over the Soviet system of health services. A complete socialisation of all doctors, hospitals, pharmacies, spas, and medical industry was carried out in the early 'fifties. Private practices have completely disappeared. Medical care including prescribed medicines, is entirely free, but to avoid misuse the patient has to pay 1 Kcs (about 10p) for each prescription. There is, however, no choice of doctors, the official reasoning being that in a socialist system where doctors have no commercial interests they have only one aim—that of giving the best possible attention to their patients. This, of course, is nonsense and patients afraid of a serious illness often try to bypass the area doctor and gain access to a specialist through the help of an influential friend.

Medical education is carried out in 11 medical faculties; the four in Prague are a general, a paediatric, a hygiene, and a dental school. There are two postgraduate medical schools—in Prague and Bratislava—which organise regular refresher courses and specialist courses. Since 1950 the number of doctors has almost quadrupled (from 12 600 to 49 526, 32·41/10 000). A large proportion of these, however, are employed in administration, organisation, and planning of health services.

The health problems of Czechoslovakia were much less complicated than in some other Eastern bloc countries: there was relatively little war destruction, the distances between villages and towns are relatively small, and major epidemics were brought under control in the late 'fifties. In eastern Slovakia the change in socioeconomic conditions with rapid industrialisation is quickly abolishing the difference between the health standards of the two parts of the country and one of the major research projects concentrates on the effect of this change on the health of the population.[26] New health problems are being created in north west Bohemia, where further exploitation of the rich brown coal field is changing wide stretches of the landscape to a moon surface with forests in the neighbouring mountains dying through pollution. As a result infant mortality in the region exceeds by 12% that of the rest of the change on the health of the population.[25 26] New health problems villages and towns is relatively small, and major epidemics country, the average life expectancy is shortened by three to four years, and upper respiratory tract diseases are twice as common as in other districts. Ruthless exploitation of water

Statistics on medical care in the Eastern bloc

	Population (millions)	No of doctors	No of doctors per 10 000 inhabitants	No of inhabitants per doctor	Hospital beds		Infant mortality (%)	No of cases of tuberculosis/ 100 000	No of cases of venereal disease/ 100 000
					Number	Inhabitants/bed			
USSR	266·6	993 000	37·2	269	3 650 000	82	31		
German Democratic Republic	16·7	31 800	19	528	178 000	94	12·1	24·3	Syphilis 954, gonorrhoea 50 861
Czechoslovakia	15·3	42 985	28·3	395	190 120	81	18·4	43·6	Syphilis 4·6, gonorrhoea 80·1
Poland	34·0	64 000	18·8	605	259 541	131	21	77	
Hungary	10·7	30 000	28·1	434	95 539	114	21	11	
Romania	21·2	33 367	15·7	620	191 910	109			
Bulgaria	8·7	19 638	22·6	443	75 652	115			
England	46·4	70 409	15·2	659	386 667	120			
Europe				552					
USA				595					

has led to the reappearance of typhoid and dysentery. The technological preparation of the surface water from rivers, ponds, and water dams for drinking is inadequate and especially in major cities may contain high concentrations of toxic substances.

A well functioning dispensary service has been successfully introduced in child health care.[26a] Every child is seen about 14 times during the first year, four times a year between the ages of 2 and 5, immediately before entering school, and later at the age of 15. All deliveries take place in a maternity hospital. If the child is ill he is seen by a paediatrician—there are at least three per district—and if there are doubts about parental care a nurse will visit the family once or twice a week. A necropsy is obligatory in every child death. Through all these measures infant mortality has fallen from 117/1000 just before the war to 16/1000 in 1981. Tuberculosis has been reduced from 24 to 9·6/100 000 children.[27-29]

The problems of old people are solved less satisfactorily: in 1980 there were only 5852 beds in homes, mostly in old palaces and castles with several inmates to each large cold room. The hospitals are overfilled with old people who could be easily managed at home. Alcohol is a serious problem in eastern Slovakia and up to 60% of crimes are due to alcohol.[30]

Research is one of the positive features of the postwar development of Czechoslovak medicine. After the closure of the Czech medical schools by the Nazis in 1939 the number of doctors at the end of the war with training in research was very small—perhaps two dozen. In 1952, however, the Czechoslovak Academy of Sciences was founded with a large institute of biology and physiology to work on basic problems of genetics, oncogenesis, and neurophysiology and educate large numbers of young research workers. The academy also created a series of small personal laboratories for various older university teachers in the medical school. In addition, since 1951 the Ministry of Health has founded some 20 well equipped institutes in Prague, Brno, Bratislava to work on problems of the mother and child, cardiovascular disease, rheumatology, nutrition, oncology, endocrinology, and organ transplantation. By enabling the 713 doctors working in these institutes to maintain worldwide scientific contacts the scientific output of these institutions has achieved a high international standard.

Hungary

The socialisation of the medical services became established by law in 1972. Doctors are prohibited from accepting money or other reward for providing treatment in the state institutions (this, however, is often ignored), but private practice is not restricted. There are four medical schools in the country. The number of doctors has doubled since the war to 1 per 437 inhabitants. There are, however, twice as many doctors in Budapest per 1000 inhabitants as in any other place and every second doctor who passes his 60th birthday moves to Budapest. "Extra Budapestem non est vita et si est vita non est ita" is obviously still valid. Dysentery is still endemic in the villages, which explains the relatively high infant mortality of 21/1000.[31]

A prominent feature of Hungarian medicine is medical research, which has a long tradition. It is coordinated by the Hungarian Academy of Sciences but, unlike Czechoslovakia, it is kept within the medical faculties. An open window to the world and frontier with Austria has enabled Hungary to occupy a leading position in research in neurophysiology and anatomy, pharmacology (discovery of Germanin), lymphology, and infant dehydration.

Poland

Many of the deficiencies of Soviet medicine are true also of Poland. Although the number of doctors in 1980 reached 64 000, they are unequally distributed; the countryside is understaffed; they are hampered by a lack of equipment, medicines (25% of the necessary drugs are unavailable), and nurses and by a very low wage (4000 zloty, about £100 a month). There are 10 medical schools in Poland and five excellent postgraduate medical schools. Private practice is possible and 5% of the Polish doctors do it exclusively, some 15% of the citizens requesting the services of a private doctor, mostly stomatologists or obstetricians.[32] Apart from understaffing of the country health centres and poor village hygiene the major problems of Polish medicine are the relatively high infant mortality (21/1000), high prevalence of tuberculosis (77/100 000 compared to 24 in East Germany and 9·1 in Denmark), and a large number of invalids (4 000 000). A programme of rehabilitation and resocialisation for invalids was worked out by the Polish Academy of Sciences but has been ignored by the government. The greatest evil is alcohol.[32] Its consumption amounts to 8·5 litres per inhabitant per year and the revenue from alcohol forms 14% of the state's budget. On the other hand, the health services receive only 6-7% of the budget.

Romania

The prewar gap between medicine in towns and the country has been reduced by creating a network of health centres in the villages. From 1950 to 1970 the number of doctors doubled from 15 583 to 33 367 (1/620 inhabitants). It is, however, difficult to motivate doctors to work in the country, and here also young doctors are directed to posts in their first three years.[33]

The number of hospital beds is inadequate and the position is made worse by allowing the relatives of the patients to share their beds or to sleep on two chairs; they help with the nursing of their sick relatives, wash them, make their beds, etc, while the nurse is concerned with the distribution of medicines, taking blood, giving injections, and keeping the records.[34]

Yugoslavia and Bulgaria

Medicine has also been taken over by the state in the remaining two countries with a socialist system: Yugoslavia and

Bulgaria. The general availability and free accessibility of the medical services have evidently improved the hygienic conditions of the villages and have reduced such endemic ailments as typhoid and dysentery. On the other hand, venereal disease has risen in Bulgaria from 618 to 1037/100 000[35]; tuberculosis fell from 178 to 48/1000 between 1961 and 1976. The prolonged life and improved health of the village population led to the appearance of other diseases, among them the Balkan nephropathy that has stimulated a lot of research—still without the desired success.[36]

Closed societies

Table I summarises the achievements of the state's health services in the countries of the Eastern bloc. Contrasting with this are the failures I have mentioned, the deficiencies in the pharmaceutical market, and the failure to provide urgently needed appliances and instruments. Worse than that is the interrupted flow of scientific information and ideas and the impossibility of contacts with the medical and scientific world outside the Eastern bloc. All correspondence is subject to strict censorship and mention of any problem in research may be interpreted as treason or revelation of state secrets. Several branches of medical science such as endocrinology or cybernetics, which were considered either to be in conflict with the all pervading "nervism" or a reactionary product of capitalism, were suppressed for many years. Freud's teachings were declared unscientific and immoral. The old biological dictum "omnis cellula e cellula" was rejected and Lepešinskaja's doctrine of all cells originating from "coacervates," later proved to be artefacts due to dirt, was taught. Mendel's and Morgan's genetics were declared to be serving reactionary capitalist aims and were supplanted by the teachings of T D Lysenko. One of the opponents of Lysenko's theory that environment can alter inherited qualities was his former teacher Vavilov, who was charged with high treason. After a trial lasting only a few minutes he was sentenced to death and eventually died of starvation in jail. Although these excesses seem to be a matter of the past, the fear that they produced persists and may for many years stand in the way of improving the contacts between our two worlds.

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Clinical curio: paradoxical movements in a hemiplegic patient during hypoglycaemia

A 65 year old diabetic, controlled with a diet, glibenclamide, and metformin, developed severe right hemiparesis, sensory dysphasia, and motor aphasia. Six months later she had a further left cerebrovascular accident with a return of the severe hemiparesis. Power returned only slowly to her right leg. She gradually developed hypoglycaemia (venous blood glucose concentration 2·0 mmol/l (36 mg/100 ml)). During the episode of hypoglycaemia she was unresponsive to command; her left arm and leg responded with only weak withdrawal movements after noxious stimulation, but her right arm and leg (usually severely paretic) made gross involuntary movements increased by stimulation; her right plantar reflex remained indefinite, but her left plantar reflex became extensor; and she grunted but did not form words. After receiving glucose intravenously she reverted to her usual state, with almost complete paralysis of her right arm, moderate power in her right leg, motor aphasia, and normal function of her left arm and leg. Computed tomography of the brain showed a small, clearly defined area of low attenuation near the left putamen (probably the first infarct) and an extensive area of low attenuation affecting most of the left temporal lobe and the inferior portion of the left parietal lobe (probably the second infarct).

The reversible inhibition of cerebral motor function is often seen during hypoglycaemia,[1] but the exacerbation of involuntary movements in hemiparetic arms and legs has not been reported previously. Hypoglycaemia possibly caused a considerable increase in the minor involuntary movements occasionally observed in paretic arms or legs; these movements are often accentuated either by forceful active movement of normal arms or legs or by external stimulation.[2]—

GEOFFREY E ROSE, senior house officer in ophthalmology, London.

1 Arky RA, Arons DL. Hypoglycemia in diabetes mellitus. *Med Clin North Am* 1971;**55**:919-30.
2 Walton JS. *Brain's diseases of the nervous system.* Oxford: Oxford University Press, 1977.