There was great variation in the length of history before admission to hospital. Nearly half were admitted within six months of their first symptom, while at the other extreme nearly one in five had symptoms lasting for more than two years.

The commonest site of neoplasm was the pre-pyloric region and the least common the fundus.

More than four out of every five patients began their illness with symptoms referable to the gastro-intestinal tract, the majority suffering from some form of "indigestion." The type of indigestion was extremely variable.

An epigastric mass was felt in about half the patients by the time of admission to hospital.

A barium meal is the most accurate single diagnostic procedure. In nine out of ten patients the radiologists reported a gastric abnormality at the first examination, and in more than four out of five correctly interpreted the findings.

Achlorhydria was a common finding, independent of the age of the patient or the site of the neoplasm. On the other hand, normal or unusually acid secretions were found in one out of four patients, so that such findings should not be regarded as any bar to the diagnosis of gastric carcinoma.

Most patients had occult blood in their stools.

Laparotomy was carried out in 63% of the patients and resection of the growth in 114 (30% of the total 375). An increased proportion in all age groups were treated by resection during the second half of the period covered by this study.

Resection offers the only hope of prolonged life. For example, nearly a quarter of the resected group were alive after five years, compared with less than 1% of the remainder.

Among the resected group, the outstanding factor influencing prognosis was the length of history. Somewhat unexpectedly, the prognosis was found to improve with increasing length of history. The age distribution of the patients, the site of the lesion, and the possibility of "ulcer-cancers" do not explain this finding, and we conclude that it is due to the occurrence of slow-growing carcinomata.

We wish to thank the physicians and surgeons of the Radcliffe Infirmary for permission to make this study. We are grateful to the records officer, Miss Coombs, and her staff for their assistance; and to Miss Eva Spitz for her help in completing the follow-up of patients. Dr A. H. T Robb-Smith and Dr. Hugh Cowdell very kindly confirmed the histological classification in a number of cases. Clerical expenses were met by a grant from the Division of Medicine, Radcliffe Infirmary.

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The Ministry of Transport has just issued a notice (M.358) to shipowners and masters on the cleansing of fresh-water tanks and filters, and recommending the avoidance of sea water in washing up and cooking, especially when near a coast or in harbour. Filters do not guarantee bacteriological sterility, and need cleaning at least once a month.

A SURVEY OF 17,301 PRESCRIPTIONS ON FORM E.C.10

BY

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The relative frequency with which different drugs are prescribed and the form in which they are dispensed is always a matter of interest to a department of therapeutics. In consequence the offer of a large number of representative prescriptions for analysis was gladly accepted. These forms (E.C.10) had already been passed by the Pricing Bureau, and, so that the investigation should be entirely anonymous, the prescriber's name had been deleted before the prescriptions were submitted for analysis.

Material and Method

The prescriptions surveyed covered the month of September, 1949. They had previously been divided by the Prescribing Committee as coming from three main areas in England, the distinction between the areas being based on supposed social or financial differences. The areas were classified as follows: (1) prosperous residential; (2) industrial; and (3) mixed suburban. Each area included four to six districts of dissimilar geographic and administrative distribution. For example, the industrial area represented industrial districts in the North, Midlands, and West of England. The choice of areas and the districts which they included were arranged by the Central Prescribing Committee in such a way as to ensure the widest possible scatter.

In each district the prescriptions came from one chemist only (four to six chemists per area). In consequence the number of doctors whose prescriptions are represented in this survey is smaller than we could have wished. As has been stated, the prescriptions were all anonymous, so that the exact number of doctors involved is impossible of computation, but is certainly not fewer than 140.

The number of E.C.10 forms submitted for analysis was 11,435, but as there were often several prescriptions on a single form the total number studied was 17,301. No practitioners' orders for stocks (Form E.C.10A) were submitted, and the survey gives no indication of the drugs dispensed personally by doctors.

All the information given on each form was tabulated on specially prepared sheets, each sheet containing 14 main headings and 45 subheadings. The information so derived was then transferred to punch cards. The prescriptions from each area were kept separate so as to allow of a comparison being made between them. Certain drugs which were only rarely prescribed were tabulated on a separate sheet and were not transferred to punch cards. This latter group comprised 412 items, representing 18 different preparations.

Results: (1) Proprietary or Non-Proprietary

Each prescription was classified as representing a proprietary or non-proprietary preparation. When the prescription contained both it was classified according to the

predominating preparation. This was not always an easy choice to make, but as the number of such prescriptions was very small any resulting error is insignificant. It will be seen from Table I that there was a considerable variation

TABLE I.—*Absolute Figures and Percentages*

	Areas			
	Residential	Industrial	Mixed Suburban	Total
Proprietary ..	1,455 (27%)	1,323 (21%)	790 (14%)	3,568 (21%)
Non-proprietary ..	3,821 (73%)	4,985 (79%)	4,927 (86%)	13,733 (79%)

in the proportion of proprietary and non-proprietary preparations prescribed in the different areas. As might be expected, a much higher proportion of elegant and expensive proprietary preparations were prescribed in the prosperous residential than in the industrial area. A higher proportion of such prescriptions, however, occurred in the industrial than in the mixed suburban area. In consequence it is probable that the variations in this respect are due more to the prescribing habits of the doctors concerned than to the social groups catered for—a situation which would almost certainly have been very different had the analysis been made prior to the National Health Service Act. That 21% of all prescriptions written were for proprietary drugs would seem to be excessive, and there is every reason to believe that this percentage has risen considerably in the past year.

(2) Type of Preparation

Each preparation was classified as belonging to one of ten types. The frequency with which these types were prescribed and their relative frequency in the different areas are shown in Table II.

TABLE II

	Areas			
	Residential	Industrial	Mixed Suburban	Total
Mixture	1,659 (31%)	2,367 (38%)	2,206 (38%)	6,232 (36%)
Tablet	1,942 (37%)	2,001 (32%)	1,609 (28%)	5,552 (32%)
Powder	102 (2%)	70 (1%)	98 (2%)	270 (1½%)
Nutrient	44 (1%)	44 (1%)	56 (1%)	144 (1%)
Gargle/lozenge ..	141 (3%)	126 (2%)	128 (2%)	395 (2%)
Skin preparations	629 (12%)	705 (11%)	699 (12%)	2,033 (12%)
Ear, eye, and nose (topical) ..	210 (4%)	253 (4%)	225 (4%)	688 (4%)
Dressings/appliances	428 (8%)	589 (9%)	631 (11%)	1,648 (9%)
Injections ..	79 (2%)	118 (2%)	48 (1%)	245 (1½%)
Suppositories/pessaries	37 (1%)	35 (1%)	17 (½%)	89 (½%)

It will be seen that *mixtures and tablets* accounted for 68% of all prescriptions. As in the case of the proprietary and non-proprietary preparations, and for the same reason, the variation in the proportion of mixtures and tablets prescribed in the three areas is probably due to the preference of the individual doctors concerned rather than to the social groups catered for. The prescriptions for preparations other than tablets or mixtures showed a remarkable similarity of distribution throughout the three areas.

Except in the case of children, tablets are usually not only a more accurate but a more convenient form in which to take a medicine. In addition they are generally cheaper than mixtures and the dispensing fee for them is smaller. It is thus most desirable that, whenever possible, tablets should be prescribed in preference to the corresponding mixture.

Powders comprised only 1½% of the total prescriptions. Stomach powders were particularly neglected in favour of the more expensive and cumbersome mixtures. As alkaline powders are less expensive, can be prescribed in larger bulk, and are also more conveniently carried than the corresponding mixture, the powder should generally be prescribed in preference to the mixture.

Dressings and appliances accounted for 9% of the total. Many of these items were expensive, and lint and cotton-wool were often ordered in enormous quantities.

Injections formed only 1½% of the total, which suggests that the parenteral administration of drugs—so unnecessarily popular on the Continent—is not a feature of English medical practice. It has to be remembered, however, that injections have usually to be given by the doctor himself, and will thus in some cases have been ordered on the stock E.C.10A form and not on Form E.C.10.

(3) Actual Drugs or Groups of Drugs

Table III indicates the actual preparations prescribed. Their arrangement is in descending order of frequency, the figures giving the actual number of times they were prescribed.

TABLE III

Order	Group	Preparation	Times Prescribed	Group Total
1	Hypnotics and sedatives	Barbiturates	1,636	2,643
		Bromides	1,007	
2	Stomachics ..	—	—	1,678
3	Tonics	—	—	1,553
4	Antipyretics and mild analgesics	Aspirin	330	1,528
		Codeine preparations	565	
		Others	633	
5	Cough mixtures..	Expectorant	402	1,382
		Sedative	174	
		Combined	806	
6	Vitamins ..	A and D	175	739
		Aneurin	177	
		B complex	126	
		C	66	
		E	27	
		Multiple	168	
7	Penicillin ..	—	—	681
8	Bronchial dilators, analeptics, antispasmodics	Adrenaline	29	637
		Ephedrine	152	
		Aminophylline	69	
		Compound	160	
		Atropine	227	
9	Iron	—	—	623
10	Laxatives ..	—	—	587
11	Sulphonamides ..	—	—	498
12	Cardiac drugs ..	Cardiac glucosides	250	481
		Nitrites	231	
13	Hormones, liver	Insulin	68	477
		Oestrogens	234	
		Liver	50	
		Others	125	
14	Others (see Table IV)	—	—	412
15	Antihistamines ..	—	—	302
16	Urinary preparations	—	—	264
17	Amphetamine ..	—	—	218
18	Strong analgesics	Morphine	57	156
		Diamorphine	37	
		Pethidine, physeptone, etc.	62	

It is a significant commentary on present-day conditions that hypnotics and sedatives should form far the largest single group (15%) of all drugs prescribed. Barbiturates comprised 9.4% and bromides 5.8% of this total. Bearing in mind the numerous unpleasant side-effects of bromides, their continued popularity is surprising, as there is little which bromides can do that phenobarbitone cannot do better. Further, bromides were often prescribed in 10-gr. or 15-gr. (0.65- or 1-g.) doses, not as a general sedative but as a hypnotic to be taken only at night. Bromides have to reach a considerable concentration in the blood before there is a sufficient replacement of chlorine ion to exert any depressant action on the central nervous system. It is therefore doubtful whether such small single doses are any more effective as hypnotics than a draught of salty water, apart from the psychological effect which may be produced by taking such a medicine. Chloral hydrate was only very occasionally incorporated in the bromide mixture. It is strange that this well-tried and valuable hypnotic, which is so peculiarly suitable for children, should be used so seldom.

It was prescribed by itself on only one occasion. Paraldehyde did not appear on a single prescription. Apart from phenobarbitone, the barbiturates were almost invariably ordered under their proprietary names.

Under the heading "*stomachics*" were grouped alkalis, antacids, cholagogues, olive oil, etc. Such preparations formed the next largest group to sedatives, comprising just over 9% of all prescriptions.

Tonics included many elegant and complex recipes which are still manifestly popular, although they must generally be classed as placebos, the justification for which is a matter of considerable current controversy.

Thus sedatives, stomachics, and tonics together formed about one-third of all preparations issued. The conditions requiring the use of these medicines have something in common with each other, and the whole group, though perhaps to a less extent than the sedatives alone, gives an indication of the type of malady for which doctors are commonly consulted at the present time.

Antipyretics and mild analgesics appeared almost as often as stomachics—that is, 8.8:9.1%. The prescription of mist. aspirin. *B.P.C.* was very popular, as was tab. codein. co. *B.P.* and its proprietary equivalents. It is very probable that large quantities of such mild analgesics are bought by patients themselves.

Expectorant cough mixtures were prescribed more than twice as often as sedative cough mixtures, yet the value of expectorants is doubtful. It is supposed that 5 gr. (0.32 g.) of ammonium chloride three times a day will liquefy the bronchial secretions, yet 20 gr. (1.3 g.) three times a day is often employed to render the urine acid without the patient noticing any such expectorant effect. The frequent combination of expectorant and sedative cough mixtures as indicated in Table III would seem to demonstrate some therapeutic confusion.

About 40% of all *vitamins* prescribed were for proprietary preparations. Aneurin and vitamin-B complex made up almost half the total of vitamins issued. Vitamin C formed less than one-tenth of the total. Yet there is probably less justification for the widespread use in this country of aneurin, nicotinamide, and riboflavin than for ascorbic acid. It can be argued that people sometimes do not obtain enough fresh fruit and green vegetables in our long winters and so may run short of ascorbic acid in the spring. Aneurin is apparently used for every imaginable neurological condition in the mistaken belief that it has a beneficial effect on the neuritic pains encountered in this country. The prescribing of large doses of water-soluble vitamins has at least this safety-valve, that the body eliminates them rapidly; but imagination boggles at the thought of the pounds' worth of unwanted synthetic water-soluble vitamins that are now daily lost in human urine. Vitamin E was ordered the least often, but one prescription for this cost over £14 and many about £5. Such prescriptions justify the need to stress the cost of drugs in undergraduate and postgraduate teaching. It might also be made obligatory for manufacturing chemists to include prices in their advertisements. Multiple-vitamin preparations were often prescribed, and are undesirable. They lull the physician into a false sense of security that he has done all that is necessary for the proper nutrition of his patient; they vary widely in composition and may lack the particular vitamin (perhaps not available in synthetic form) which might conceivably help the patient, and may thus create a state of vitamin imbalance by providing an excess of others.

Penicillin in all its forms accounted for about 4% of the total, but only 6.9% of this was for parenteral administration. About 30% of the prescriptions for penicillin were for oral preparations and over 40% for penicillin ointments. As has been suggested above, the seemingly small proportion of prescriptions for penicillin to be given by injection may be accounted for to some extent by the doctors giving it from their own stocks. The percentage of prescriptions for orally administered penicillin was surprisingly high, especially as these orders for small doses were given before a high dosage of oral penicillin had been proved to be therapeutically effective.

It is surprising that *adrenaline* was prescribed so infrequently when asthma is so common. Doubtless adrenaline is often injected by the doctor himself from his own stocks, but it would seem from the figures that the habit of self-injection with adrenaline is not commonly taught to asthmatics.

A preparation of *iron* was included under this heading only if it contained amounts of iron approximating to the dose recommended in the *B.P.* Some of the favourite prescriptions for iron, strychnine, and phosphates contain very little available iron and were classed as tonics. Prescriptions for iron in adequate amounts comprised only 3.5% of the 17,301 items surveyed, and in over half of these it was prescribed as a mixture. In most cases it is preferable to give iron as a tablet, not only for the reasons already advanced regarding tablets and mixtures, but also because of greater palatability and the fact that ferrous sulphate in tablet form does not discolour the teeth. When the high incidence of iron-deficiency anaemia in this country is considered in comparison with the relative rarity of vitamin-deficiency states it is remarkable that iron should have been prescribed only 623 times in comparison with 739 prescriptions for vitamins. No doubt iron preparations are often dispensed at maternity and child-welfare clinics, and such issues do not appear on Form E.C.10, but the same can be said of vitamins.

The total of prescriptions for *laxatives* was smaller than anticipated, and strongly suggests that many people still buy their own laxatives.

Sulphonamides formed 3% of the total prescriptions, so that even in 1949 they were less frequently prescribed than preparations of penicillin. Of the prescriptions for sulphonamides 56% were for tablets, 12% for mixtures, and 10% for skin preparations. In view of the likelihood of evoking sensitivity reactions by the topical application of sulphonamides, this last figure is probably undesirably high.

Only 14% of the prescriptions for *cardiac glucosides* were for tincture of digitalis, which used to be the most popular way to prescribe the drug. It is all to the good that the tincture is gradually being replaced by the powdered leaf—which contains all that the foxglove has to offer—and by "digoxin." These latter preparations keep better than the tincture, and with them the dosage is more accurate. Quinidine did not appear on any prescription.

Diabetes is a common disease, while the megaloblastic anaemias are comparatively rare. Yet *liver* preparations were ordered 50 times, in comparison with only 68 prescriptions for *insulin*. This suggests that liver is often prescribed as a general tonic or for the treatment of anaemic patients other than those specifically requiring the haemopoietic factor. It is very doubtful whether the use of liver is ever indicated except in the treatment of the megaloblastic anaemias.

It will be seen that even two years ago *amphetamine* was becoming popular, and in this survey it was prescribed 218 times, which is half as often again as the prescriptions for ephedrine. It is probable that since 1949 its use has increased considerably. "Dexedrine" is included under this heading. It is very much more expensive than amphetamine and it is doubtful whether it possesses any advantages over the latter.

Prescriptions for *diamorphine* (heroin) constituted about one-third of the orders for strong analgesics. In view of the great danger of habituation to this drug and the fact that in some countries its use is prohibited, the figure is a high one.

(4) Drugs Rarely Prescribed

It is fortunate that "shot-gun" preparations for iron with folic acid, liver, or hog's stomach, which are justifiable on no sound haematological basis, should not have been

TABLE IV

No. of Times Prescribed	Name of Drug
Under 60	Calcium
,, 50	Iron with folic acid, or liver, or hog's stomach
,, 40	Anthelmintics
,, 30	Phenytoin "Methedrine" and nikethamide Cold vaccines
,, 20	Other vaccines Mersalyl Ergot Ergotamine tartrate "Diparcol" and "trasentin"
7	"Pernivit"
3	"Priscol"
2	Thiouracil Stannoxyl
1	Antimalarial "Tridione" "Myocrisin"

prescribed more than 50 times, and that vaccines for the prevention of the common cold, for the use of which there can be little scientific justification, do not seem to have been popular.

Mersalyl is a valuable drug which was prescribed fewer than 20 times. It is, however, an example of a drug which the doctor often administers from his own stores. Nevertheless the number of times it appeared on these forms seems surprisingly low.

It also seems quite remarkable that *thiouracil* was prescribed only twice out of 17,301 prescriptions. In spite of the fact that it is often used under hospital supervision, it is generally the practitioner who writes the prescription for maintenance treatment. If this practice is general it can only be supposed that the conservative treatment of thyrotoxicosis with thiouracil is less common in England than might have been expected.

Conclusions

The study of a large number of prescriptions provokes certain reflections on the teaching of pharmacology and practical therapeutics in our medical schools. In some schools pharmacology is taught along with physiology as a preclinical subject. In others it is taught in the first clinical year, when the student has seen only a limited number of the disorders the treatment of which is discussed. Thereafter instruction in treatment is often limited to the last ten minutes of a medical clinic, and during the fifth and sixth years of his course the undergraduate often forgets the actions and uses of the drugs which he heard about while studying pharmacology. In consequence many young graduates go into practice with a very inadequate knowledge of applied pharmacology, and tend to rely more and more on the ingenious (sometimes very good, but sometimes very misleading) advertisements of the drug firms which cover his breakfast table. In the days when there were few potent or specific drugs this ignorance of applied pharmacology was of less importance. Nowadays when we are Jove-like in the therapeutic thunderbolts we can hurl—drugs potent for evil as well as for good—it is of paramount importance for us to be thoroughly conversant with the pharmacological tools of our trade. It is suggested, therefore, that a series of simple lectures in therapeutics by a practical physician interested in pharmacology should be given in the last clinical year of the medical course. It is a subject which lends itself to systematic lecturing, and is of more importance than the study of some of the more recondite specialties which at present overload the curriculum.

Courses in pharmacology in medical schools are now usually, and very properly, undertaken by academic scientific pharmacologists, who have revolted against the old-fashioned instruction in materia medica and in the compounding of elaborate prescriptions elegantly flavoured, meticulously bottled, and exquisitely labelled. They have realized that there are few occasions in practical therapeutics which demand the prescription of more than one drug in a bottle, tablet, or powder, plus the vehicle and flavouring agent. Perhaps, however, the pendulum has swung too far in the other direction and that inadequate instruction is now being given in the principles of correct simple prescribing. At a recent oral examination for one of the higher clinical diplomas five consecutive candidates were quite unable to write out a correct prescription for a simple laxative pill containing cascara and belladonna, though they were ready and eager to discuss the most abstruse and recondite clinical syndromes.

It has been the object of this survey to present modern trends in prescribing in an objective and uncontroversial manner. While it is the aim of us all to give our patients the best treatment possible it is also our duty to consider the means at the country's disposal. Good prescribing is often economical prescribing, and it is not improbable that the rewards of thoughtfulness in this respect will be enjoyed by both patient and doctor.

A CASE OF ACUTE BERIBERI COMPLICATING POLYSEROSITIS IN BRITAIN

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Several cases of beriberi developing in Britain have been reported, and the subject has been reviewed by Jones and Bramwell (1939). Most of the cases have been secondary to chronic alcoholism, as in two cases described by Konstam and Sinclair (1940). Similarly vitamin-B_1 deficiency may be found in the absence of alcoholism if the diet has been subnormal over a long period, as in cases described by Yudkin (1938) and Bates (1941).

Apart from deficient food intake, vitamin-B_1 deficiency may arise from either one or more of the following factors (Harris, 1938): (1) imperfect absorption, as in chronic dysentery; (2) imperfect utilization, as in hepatic cirrhosis; (3) increased demand, as in pregnancy.

The case described showed signs similar to those of beriberi secondary to a severe illness, with prompt relief following the intramuscular administration of vitamin B_1.

Case Report

On the night of March 2, 1950, a 12-year-old girl, an only child, complained of headache and pain in the mid-sternal region. She did not sleep that night, and the next day was off her food and vomited at intervals. On the following day her own doctor diagnosed pneumonia, and a course of