SELF-MEDICATION AND PATENT MEDICINES

BY

J. N. P. DAVIES, M.B., Ch.B.

(From the Physiology Department of the University of Bristol)

The assembly of volunteers undergoing the Medical Research Council haemoglobin survey afforded an opportunity of inquiring into their consumption of medicines not taken under medical direction or advice. Apart from a note by William and Hill (1930) on the use of patent medicines by tuberculous patients, the medical literature contains no record of investigation into the details of the individual consumption of patent medicines. So the volunteers were handed a list of medicines, devised in conjunction with Dr. H. Heller, and were asked to read it right through and to tell the observers what they used and the details of its consumption. Those taking a remedy under medical advice were ignored. The descriptive terms of the questionnaire were varied so as to bring to the mind of the person questioned the wide range of medicaments and their different forms that might be taken. Aspirin was given a place of its own, as it is employed for so many different purposes. The only real difficulty in assigning a medicine to its appropriate category was in the case of milk of magnesia, which seems to be used more for its laxative than for its stomachic properties. It is included under the vague heading of "Bowel Medicine."

The results are set out in Tables I and II. 277 persons were questioned, comprising factory workers (mostly engaged in light engineering), office, laboratory, and laundry workers, nurses, business men, and A.R.P. full-time staff. The wording of the questions is shown in the first column of Table I. All above the age of 15 years were put through the test. The questions were always answered cheerfully and courteously and without embarrassment, and at no time was it felt that subjects were concealing their use of the medicines suggested to them. By an oversight the use of "cold-preventives"—e.g., calcium—was not inquired into. No questions were asked about substances taken for sexual disabilities, venereal diseases, etc., real or imagined, as it was felt that this would put too great a strain on the subjects' honesty. But from some of the statements made there is good reason to think that there is still a considerable trade in medicines for venereal disease.

Self-medication in Relation to Age and Sex

Table I shows that a slightly larger proportion of females (78%) took medicines than males (72%), but the difference is statistically insignificant. Out of 277 questioned only 11 were taking gastric sedatives (even including those taking milk of magnesia). This is striking, as it is generally believed that the consumption of such substances by the general population is very high; several factory medical officers suggested that about 10% of the male operatives regularly used them. The very low percentage revealed by the survey may be a truer index of the state of affairs, or it may be evidence of selection.

There is the possibility that sufferers from chronic gastric disorders are not of the temperament that volunteers to lose blood even in small amounts. Hence they are missing from surveys such as this—a point of rather wide implication. With the exception of those suffering from skin troubles and a very few in obvious ill-health, the majority professed themselves as thoroughly healthy. Thus this is a survey of the medicines taken by healthy people.

The total of 277 persons was rather too small to submit all the results to statistical analysis, as when broken down into small groups there were too many void classes; so it was decided to set out the results directly in the hope that, though too small now, they might be built into a larger series later. However, the relation between self-medication and age for each sex is shown in Table II. For all ages combined the proportion

TABLE II.—*Self-medication by Age and Sex*

Ages	No. of Observations		No. not taking any Medicine		No. taking One Medicine		No. taking More than One Medicine	
	M.	F.	M.	F.	M.	F.	M.	F.
15-	27	67	6	16	10	39	11	12
25-	41	26	10	5	20	18	11	3
35-	43	18	15	2	20	9	8	7
45+	38	17	11	5	20	7	7	5

A comparison of the age distribution of those taking medicine and those not taking medicine gave:

				χ^2		P
Males	..	..	..	1.76	..	0.63
Females	..	..	..	2.02	..	0.57

of males who took more than one medicine was slightly but insignificantly larger than for females, the percentages being 25 and 21. For both males and females the proportion taking medicines was independent of age. This appears most important, as it would be expected that the greatest consumption of medicines would occur during the ages when physiological stresses are at their maximum. For instance, at the menopause it might be expected that the proportion of women taking medicines would be much higher than in the 25-35 age group. This finding clearly suggests that the consumption at all ages is dependent not on physiological or pathological demand but on advertisement and suggestion: that if there were no advertisements to induce the public to believe that they need such medicines there would be little demand. While this is true over the whole range of medicines, it seems to be true also of each type of medicament, although no attempt has been made to express this statistically. Self-medication may in rare cases be a product of serious defects in our social life (*Our Towns*, 1943), but it would seem that there is no real need for any patent medicines of any sort, and that the present demand is almost entirely the result of advertisement.

Aspirin

Aspirin is used for many purposes—for headaches, for colds and chills, for any rheumatic pains, even as a sleeping draught. It is a remedy more favoured by women than men: 44.5%

TABLE I.—*Self-medication Related to Occupation*

[illegible]

of the females and 21.5% of the males took aspirin—a significant difference between the sexes of 23.0 ± 5.6 . Regular users appeared to take it for headaches and not for rheumatic ailments, as there is not a rising incidence with increase in age; throughout the survey it was noted that the heaviest occupational incidence of aspirin-taking was among those engaged in dry indoor work, laundry workers (in dry posts), and female factory workers, and the incidence was low in A.R.P. workers in outdoor occupations. Nowadays aspirin is almost as much a drug of addiction as is morphine. Habit plays an enormous part in the consumption of aspirin. All three women taking aspirin daily did so to ward off headaches; only one of the five taking it at least weekly used it as an antirheumatic. Headache powders were also chiefly used to ward off and not to relieve headaches. One woman took two tablets of a proprietary compound four-hourly three days a week to ward off headaches. And very successfully, it appears, for she never has headaches; but she is lucky that the Government has protected her against worse things, for the tablets she takes contained amidopyrine until it was placed on the Fourth Schedule. We are ignorant of the remote effects of many common and seemingly harmless substances when used with such intensity over a long period of time. Few of these people had or ever had had headaches, but they took these substances as preventives.

Laxatives

As might be expected, laxative medicines were very extensively used, the salines markedly predominating over the vegetable laxatives. The percentage incidence of takers was highest in the office and laboratory workers and lowest in the A.R.P. workers, who lived a more or less open-air life. The habit factor was strongly shown by the saline-takers, more taking regular doses than those taking doses irregularly. The vegetable laxatives were for the most part taken irregularly, as the spirit or the state of the bowels suggested. Of recent years there appears to have been a swing from the use of the stronger vegetable laxatives to the milder salines, probably correlated with sustained and clever advertising. The influence of advertising is probably again shown in the gross predominance of one particular saline and one particular vegetable laxative. This does not seem to be due to any wartime zoning or rationing, but to be a matter of personal preference.

It is probably in relation to laxatives that the words "harmless and beneficial" (Viscount Gage, 1938) are most commonly applied. Yet besides the general objections to the regular use of laxatives (Hurst, 1924) many specific complaints have been voiced. In particular, liquid paraffin has been indicted. It is known to interfere with vitamin A absorption (Curtis and Ballmer, 1939) and also with vitamin D, calcium, phosphorus, and vitamin K (Council on Food and Nutrition, A.M.A., 1943). It is thus a most undesirable laxative to use when a patient is in need of these substances—e.g., in pregnancy. But I am indebted to Dr. F. J. Lewis for the information that of 12 pregnant women attending an antenatal clinic six were using liquid paraffin, some of them daily for over five months. One imagines that their Ministry of Food vitamin supplements were rather wasted. (The women are not included in this survey.) There is little doubt that laxatives used regularly over a lengthy period will cause deleterious effects. That a daily cascade of salines through the bowels may cause serious decrease of absorption of, for example, iron is possible, and it is known that calcium absorption is affected. Meulengracht (1938) reported a case of osteomalacia of the spine following the daily ingestion of Carlsbad salts (sodium sulphate and sodium bicarbonate) every morning for 35 years. No such striking case can so far be quoted against the vegetable laxatives, but there is no doubt of their harmfulness (Clark, 1938). Mass Observation (1943) report that there has been an increase in the taking of salines and laxatives in wartime, but mention no figures. They also state that there has been no increase in the taking of digestives.

The "Preventive" Group

The results of the inquiry into the taking of the group broadly known as preventives—iron, vitamins, etc.—were most disappointing. This group, it might be thought, would be used extensively after the propaganda of the last few years. Yet

only 18 out of 277 were taking any of these substances, supposedly so beneficial, and half of these were laboratory assistants, mainly engaged in biological work, and two more were nurses. (Ten nurses were given iron and vitamins by the hospital authorities.) Thus only 7 out of 240 of the general workers took either iron or vitamins, and many of the females badly needed iron. It has recently been announced that the Ministry of Food is to insist that vitamin preparations must conform to certain specifications. But surely it is equally essential that iron preparations should not be sold as purporting to cure anaemia unless they contain adequate amounts of iron. Mass Observation (1943) report that preventives, including calcium as a cold-preventive, were taken by "many people." They also state that there has been an increase in vitamin-taking in wartime. The incidence suggested would appear to be much higher than that found in this survey. The explanation may lie in the introductory words of their bulletin—that those surveyed were an "unusually thoughtful" section of the population.

Comment

The two most gratifying aspects of the survey were: first, that the more exotic and extravagant remedies were not much used—a fact noted by Clark (1938); and, secondly, that there was a widespread desire for information among those questioned. They desired good health, and many quite sincerely thought that they were ensuring it by the taking of these medicines. The majority of those surveyed were ostensibly healthy people, and when the high proportion taking drugs is noted we may well wonder at the probable extent of self-medication among the sick folk. The excuse of poverty is lacking, as all those surveyed were covered by national health insurance, and it is a curious fact that the public have no faith in medicaments that can be obtained cheaply. While always recognizing the therapeutic powers of faith and hope, even in patent medicines, it is more than time that steps were taken to protect the public—both the sick and the healthy—from exploitation. Mr. A. L. Taylor of the Bristol Royal Infirmary has kindly estimated the cost of many of these substances in relation to their purchase price, and his figures reveal that there has been little improvement on the conditions revealed in *Secret Remedies* (1909). In fact, as Lord Horder said in 1938, in the last 25 years, with the increased extent and power of advertisement, the public is being swindled on a larger scale than ever before. The 1941 Act has checked a few of the more grotesque abuses, but the uselessness of the Act in really improving the sorry state of affairs is shown by a perusal of Chapman's book (1942). In view of the experience of Edwards and Kinsie (1940) it would be wise to be sceptical of the possibility of improving matters by increased education, for they found, after three years of intensive campaigning against venereal disease, that the persons surveyed were more ignorant than ever, and that the number of drug stores where counter-prescribing and the sale of patent nostrums went on was greater than ever. Every advance in medicine is mirrored by an extension of the patent medicine manufacturers into the same field. Recent belated action by the Newspaper Proprietors' Association (1943) in the censoring of advertisements will do little to help. Their ban does not go beyond the "code" of the members of the Proprietary Association of Great Britain (Chapman, 1942). For harmful substances can still be advertised and sold, and impressionable people will still be intimidated into using the advertised medicaments. Very few sick people are able to read dispassionately and discriminatingly advertisements of substances purporting to cure or relieve the ailments from which they suffer. To prevent much public exploitation and ill-health restrictive legislation is imperative.

Summary

The results of a census of self-medication among 277 persons engaged in various occupations in Bristol is presented.

The present data show that self-medication is independent of age for both males and females. For all medicines combined there was no difference between the sexes. Differences existed for specific remedies: the use of aspirin by females was significantly greater than by males, but the majority of the medicines involved too few persons for definite conclusions to be drawn.

Some specific groups of medicines and their effects are briefly discussed.

I wish to express my thanks to the Medical Research Council and to Prof. R. J. Brocklehurst for permitting me to make this survey; to Dr. H. Heller, Mr. A. L. Taylor, and Mr. W. R. Lush for their invaluable help; and especially to Mr. Horace Todd, who performed the statistical analyses.

REFERENCES

- Chapman, H. E. (1942). *The Law Relating to the Marketing and Sale of Medicines*, London.
 Clark, A. J. (1938). *Patent Medicines*, London.
 Council on Food and Nutrition (1943). *J. Amer. med. Ass.*, **123**, 967.
 Curtis, A. C., and Ballmer, R. S. (1939). *Ibid.*, **113**, 1785.
 Edwards, M. S., and Kinsie, P. M. (1940). *Venerae Disease Information*, **21**, 1.
 Gage, Viscount (1938). *British Medical Journal*, **2**, 324 (also 1938, **110**, H.L. Deb., 5 s.).
 Horder, Lord (1938). *Ibid.*, **2**, 322 (also 1938, **110**, H.L. Deb., 5 s.).
 Hurst, A. F. (1924). *Medical Essays*, London.
 Mass Observation Bulletin (June, 1943), London.
 Meulengracht, E. (1938). *Lancet*, **2**, 774.
 Newspaper Proprietors' Association (1943). *British Medical Journal*, **2**, 462.
 Our Towns (1943). P. 88, London.
 Secret Remedies (1909). B.M.A., London.
 Williams, L. R., and Hill, A. M. (1930). *J. Amer. med. Ass.*, **94**, 1292.

SAFETY IN OPERATING THEATRES AND ANAESTHETIC ROOMS

MEMORANDUM BY INSTITUTION OF ELECTRICAL ENGINEERS

In February, 1938, papers were read before the Institution of Electrical Engineers by the late Prof. W. M. Thornton and Dr. E. H. Rayner, and as a result the question was raised whether the Institution ought not to take the initiative in arranging for the discussion of safety in the electrical equipment of operating theatres and their ante-rooms, where there would appear to be danger of explosion of anaesthetic vapours. The Council was impressed with the wisdom of this course, and it was agreed that the Institution should set up a suitable committee to consider: (1) The electrical conditions and design of equipment necessary for the elimination of the risk of explosions. (2) The desirability of a Code of Safety Rules. (3) The arrangements which are appropriate for ensuring that safe equipment is installed and safe conditions are maintained.

Under the chairmanship of Mr. H. T. Young, the Operating Theatres Electrical Apparatus Committee was formed and appointed two technical subcommittees to carry out its work, one to deal with questions of static electrification, and the other to deal with apparatus, installation, and maintenance, with Dr. E. H. Rayner of the National Physical Laboratory and Mr. H. W. Swann of the Home Office respectively as chairmen. These committees began their investigations in February and March, 1939, but before much progress had been made the deteriorating political situation and the evacuation of many large hospitals from London caused the suspension of the work. However, in May, 1943, a communication was received from Dr. C. F. Hadfield, on behalf of the Council of the Association of Anaesthetists of Great Britain and Ireland, requesting that the work of the committee should be resumed, and a ready response was forthcoming from the council of the Institution.

It had become clear at an early stage that the elimination of danger from anaesthetic explosions must depend mainly upon the provision of safe electrical conditions and apparatus, and that, to achieve this, arrangements would need to be made to ensure that safe equipment was installed and that safe conditions were maintained. After having considered the advisability of drawing up a brief safety code, the committee unanimously adopted a suggestion put forward by Mr. Swann, that the detailed recommendations of the committee should be expressed in the form of a distinctive Warning Notice of a size and form adequate for display in operating theatres and similar locations where explosion risks might exist, so that its guidance should be constantly before not only the anaesthetists and surgeons but also the nursing and other staff employed.

In November, 1943, the Warning Notice in its final form was submitted to the council of the Institution, when it was decided that it should be sent to the Minister of Health with a request for distribution by the Ministry to hospitals, nursing homes, etc., in England and Wales; it was further agreed that, if it were adopted by the Ministry of Health, it should also be sent to the Scottish Office and to the Government of Northern Ireland for a similar purpose.

In March, 1944, the committee learned that the Minister of Health had convened a representative interdepartmental conference, attended by representatives of the interested Government Departments, at which the decision had been taken to circulate the Warning Notice to all voluntary hospitals and to all hospital authorities in this country, and, through the agency of the Admiralty, War Office, and Air Ministry, to all Service hospitals in this country and abroad, after certain omissions and modifications had been made. It was also decided to delete the references to published work which had been given in the original Notice, but to include them in a covering letter sent to hospitals, etc., in this country.

At a meeting in March, 1944, the council of the Institution noted the dissemination that had thus been assured for the Notice, and authorized the publication of the Warning Notice in its revised form [reproduced in the *Journal* of July 1, p. 19], together with the present

memorandum, which contains a note of the more detailed recommendations contained in the original draft. It was felt that as changes and re-equipment may be carried out in individual hospitals from time to time, it would be desirable that the medical and electrical experts concerned should be made aware of the full precautions which the Council of the Institution recommend. The major departures may be summarized as follows.

In their review the members of the committee were of the opinion that a very real risk existed that the persons of operating personnel might become charged with electricity, and an appropriate reference in this regard was made in paragraph (c) of the introductory matter. The paragraph also points out that the risk of a spark occurs when an object is brought nearly into contact with another at a different electrical potential. In the list of precautions and recommendations the committee added a recommendation to item 2 that when operations were finished for the session or for the day, all the ether should be removed from the apparatus.

In connexion with the equipment of operating theatres it was recommended that electric lamps connected to the main supply should be fitted with protecting shields of metal, glass, or other suitable material, and in the list in item 7 of the insulated apparatus which can be electrified in various ways portable anaesthetic equipments were included.

The important question of earthing received additional attention, and in connexion with item 8, which points out that trailing chains are useless when the floor is covered with dry, non-conducting rubber, cork carpet, or linoleum, the additional recommendation was made that in such cases earthings may be effected by attaching the chains to water pipes or to some other suitable earth connexion. The last sentence in item 9, suggesting that under war conditions damping of the floor may have to be adopted as an alternative to the use of special "conducting rubber," was added in the course of the revision of the original notice.

In dealing with the state of the atmosphere in the operating theatre, the committee in its original recommendations drew attention to the value of maintaining a satisfactory degree of humidity and put forward the recommendation that equipment for conditioning the air of the theatre should provide adequate and continuous control of humidity (approximately 60 to 70%).

References to Scientific Work

In the circular letter issued by the Ministry of Health to establishments in England and Wales (Circular 53/44 of June 4, 1944) a list of the references to scientific work which has been carried out on this subject was included, and for convenience these are set out below.

- Memorandum 191/Med., published by the Ministry of Health (H.M. Stationery Office, price 1d.).
 Rayner, E. H.: "The Risk of Explosion due to Electrification in Operating Theatres of Hospitals," *J. Inst. elect. Eng.*, 1938, **83**, 156.
 Thornton, W. M.: "The Electrical Ignition of Mixtures of Ether Vapour, Air and Oxygen," *ibid.*, 1938, **83**, 145.
 Swann, H. W.: "Electrical Ignition of Anaesthetics," *British Medical Journal* 1938, **2**, 234.
 "Anaesthesia Explosion Hazards" (Code of Safeguards, Bureau of Standards, U.S.A.).
 "Combustible Anaesthetics and Operating-room Explosions," issued by the National Fire Protection Association, 60, Batterymarch Street, Boston, Mass., U.S.A., price 15 cents.
 Finch, G. I.: "Ignition of Explosive Anaesthetic Mixtures," *Proc. roy. Soc. Med.*, 1935, **28**, 1130.
 Regulations for the Electrical Equipment of Buildings, 11th edition (revised), issued by the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, price 1s.

KHARTUM SCHOOL OF MEDICINE

The seventh report, 1939-42, of the Kitchener School of Medicine, Khartum, records continued progress in spite of wartime difficulties. Graduates from the school have served as officers in the Sudan Defence Force—both within and outside the Sudan, and also in the Civil Medical Service. The course of professional studies consists—at present—of a year and a half at the School of Science and four years and a half at the Kitchener School of Medicine. The two teaching hospitals at Khartum and Omdurman provide the opportunity for all Sudanese medical graduates to spend two years in resident appointments in medicine, surgery, obstetrics and gynaecology, and ophthalmology.

A few lines may be quoted from the sympathetic and constructive Visitor's Report, 1942, by Major-General W. H. Ogilvie, consulting surgeon, M.E.F. "The hopes of Gordon, Kitchener, and Stack, men who loved the Sudan and sought its welfare, are here embodied, in a scheme to which those who are responsible for Britain's stewardship in developing countries can point with satisfaction. The present directors of the school are working in the spirit of that stewardship, determined to provide a centre of medical education which, though small, is of high quality. The searching character of the final examination, the insistence that all subjects must be taken at the same time, the 60% pass level, and the practice of inviting visitors from Britain to observe and comment, are evidence of a policy that aims to maintain and even improve a standard that is already high."