

THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

PHARMACEUTICAL
SERVICES IN IRELAND

P. R. KAIM-CAUDLE

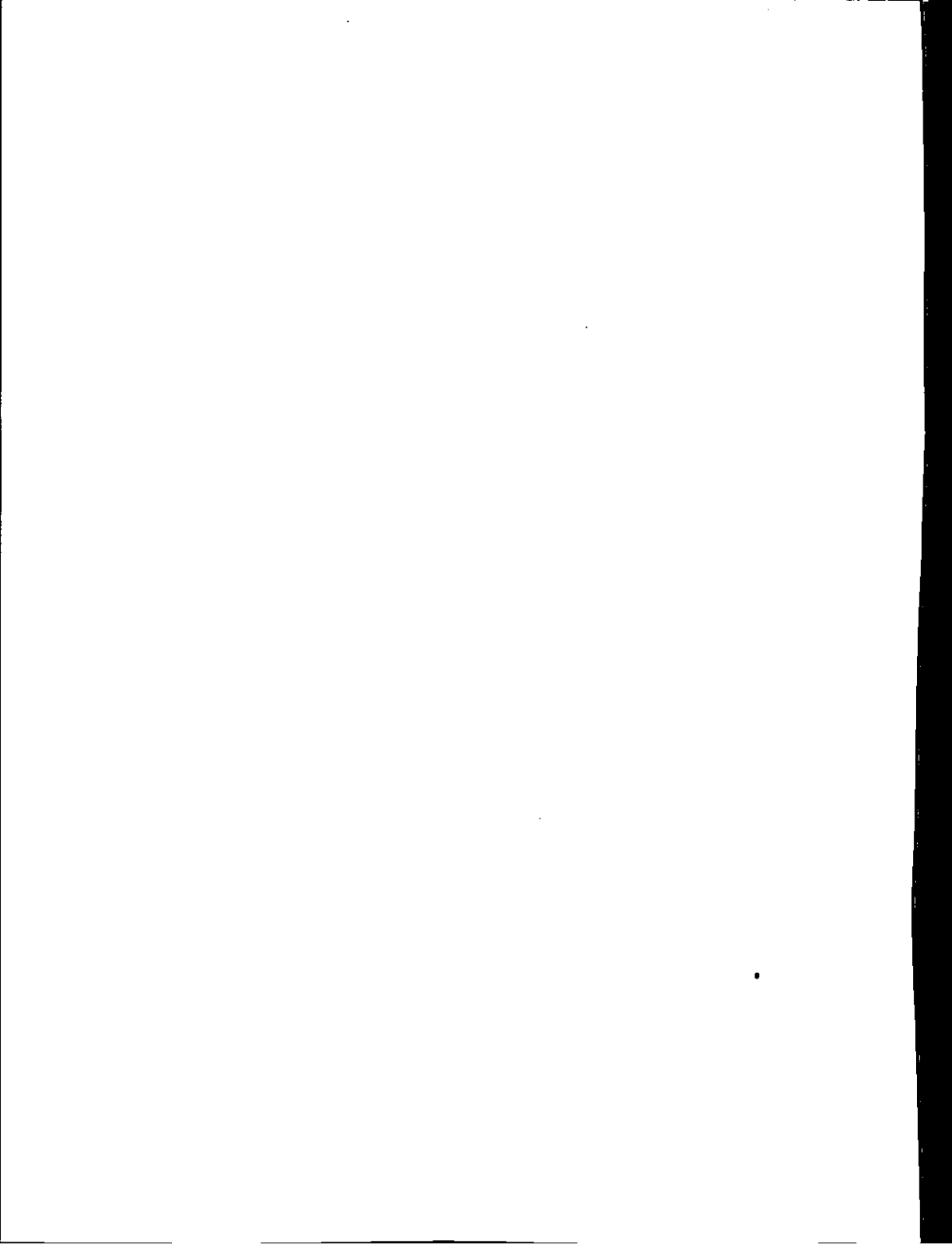
Assisted by

KATHLEEN O'DONOGHUE
ANNETTE O'TOOLE

BROADSHEET No. 3

May 1970

P.R. KAIM-CAUDLE: Pharmaceutical Services in Ireland Broadsheet 3



Copies of this paper may be obtained from The Economic and Social Research Institute, 4 Burlington Road, Dublin 4, price 13/6 per copy.

THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

PHARMACEUTICAL
SERVICES IN IRELAND

P. R. KAIM-CAUDLE

Assisted by

KATHLEEN O'DONOGHUE
ANNETTE O'TOOLE

BROADSHEET No. 3

MAY 1970

P. R. Kaim-Caudle is a Research Professor with the Institute on secondment from the University of Durham. The paper has been accepted for publication by the Institute. The author is responsible for the contents of the paper including the views expressed therein.

ACKNOWLEDGEMENTS

IN the preparation of this paper the author has received assistance and guidance from a large number of people. These include pharmacists in public service and private practice, civil servants, local government officers, university teachers and his colleagues at the Institute. To all of them he wishes to express his thanks.

The information relating to Canada was obtained by Kathleen O'Donoghue during her stay in Ontario in the summer of 1969, that relating to Denmark, by James Wolsey who was then a graduate research student in Copenhagen and is now a Child Care Officer with the Durham County Council. The report on Northern Ireland was made possible by the co-operation of Mr. A. W. Kernahan, Pharmaceutical Officer and Mr. R. G. P. McMullan, Head of Drug Pricing Bureau, both of Northern Ireland General Health Services Board. Dr. J. P. Corridan of University College, Cork, was most helpful in eradicating many shortcomings of the first draft of the Broadsheet.

The preparation of the paper throughout its various stages was greatly facilitated by Jean Barrett. Finally, the author would like to thank Pauline Mitchell who typed many drafts from illegible scribble.

Permission to reprint Dr. David Cargill's article in *The Lancet*, 24 June 1967, has kindly been given by the Editor and the Author.

TABLE OF CONTENTS

SUMMARY	ix
I. INTRODUCTION	1
II. THE NATURE OF PHARMACEUTICAL SERVICES	1
III. PHARMACEUTICAL MANPOWER	3
The Pharmaceutical Register	3
Numbers and Distribution	5
Education	7
IV. THE STRUCTURE OF PHARMACEUTICAL SERVICES	13
Retail Pharmacy	13
Lower Income Group Services	20
Hospital Services	32
Private Purchase of Drugs and Medicines	38
V. PHARMACEUTICAL SERVICES IN OTHER COUNTRIES	42
VI. PHARMACEUTICAL SERVICES—SOME ISSUES	50
Education	50
Income from Prescriptions	55
Sale of Proprietary Medicines	62
Self-Treatment	66
ADDENDUM	70
"Self-Treatment As An Alternative To Rationing Of Medical Care" by David Cargill (Reprinted from <i>The Lancet</i> , 24 June, 1967)	

VII. FUTURE DEVELOPMENTS	74
Government Proposals	74
Characteristics of the Service	78
The Role of the State	81
VIII. PROPOSALS FOR REDUCING THE COST OF MEDICINES	84
Sale of Non-Branded Preparations	84
Channels of Distribution for Prescriptions	85
Control of Drugs Scheme	90
Licensing of Retail Pharmacies	91
APPENDIX—PHARMACEUTICAL SERVICES IN OTHER COUNTRIES	94
NORTHERN IRELAND	94
General Medical Services	94
Regional Analysis	98
Hospital Pharmacies	100
Retail Pharmacy	100
DENMARK	103
Education	103
Numbers and Distribution	104
Professional Associations	105
Retail Pharmacy	106
Insurance Funds	108
CANADA	109
Education	109
Numbers and Distribution	114
Retail Pharmacy	115
Hospital Pharmacy	117
Department of Health, Ontario	120
Drug Pricing Programme in Ontario	121
BIBLIOGRAPHY	123

TABLES

TABLE 1. Age and Sex Distribution of Registered Pharmacists, 1967	6
2. Number of Retail Chemist Shops and Numbers Engaged, 1966	8
3. B.Sc. (Pharmacy) Degree Examination Results and New Licence Registrations with the Pharmaceutical Society of Ireland, 1964-1969	10
4. Average Sales and Gross Margin Components per Retail Chemist Shop	15
5. Gross Margin and Rate of Turnover of Various Types of Retail Shops	16
6. Population and Number of Retail Chemist Shops	18
7. Proportion of the Population on the General Medical Services Register	21
8. Expenditure on Medicines by Local Authorities 1967/68 and 1968/69	23
9A. Expenditure on Medicines per Person on the General Medical Services Register in Dublin, 1962-1968	24
9B. Expenditure on Medicines per Person on the General Medical Services Register in Cork, 1962-1969	24
10. Analysis of Cost of Medicines per Person in Dublin and Cork Health Authorities	26
11. Selected Dispensary Districts in Dublin Health Authority Area Where Cost per Person was £2 10s. or Less and £4 or More, 1967/68	28
12. Expenditure on Medicines by Voluntary Hospitals, 1960-1967	31
13. Total Expenditure on Medicines by the Dublin Health Authority, 1963/64-1967/68	33
14. Total Expenditure on Medicines by the Cork Health Authority, 1960/61-1967/68	34
15. Expenditure on Medicines by Health Authority Institutions and Voluntary Hospitals in Dublin and Cork, 1963/64-1967/68	35
16. Number of Establishments and Turnover of Retail Pharmacies in the Republic (1966) and Northern Ireland (1965)	46
17. Number and Cost of Prescriptions, 1958-1967	48

TABLE 18. Comparative Prices of Certain Ethical Drugs to Retailers in London, Toronto and Dublin, 1966/67	61
19. Number of Prescriptions and Average Gross Cost, Northern Ireland, 1957-1968	97
20. Pharmaceutical Statistics, Northern Ireland, 1968/69	99
21. Turnover of Chemist and Photographic Goods Shops, Northern Ireland, 1965	102
22. Distribution of Chemist Establishments by Income from Prescriptions Dispensed, Northern Ireland, 1966	102
23. Persons Engaged in Chemist and Photographic Goods Shops, Northern Ireland, 1965	103
24. Cost of Prescriptions in Denmark, 1957-1967	110
25. Student Enrolment in Canadian Schools of Pharmacy, 1967/68-1968/69	113
26. Pharmacy Degrees awarded in Canada	114
27. Average Costs and Profits of Pharmacies in Canada, 1967	118
28. Statistics Relating to Pharmacy in Canada, 1967	119

SUMMARY

(i) *Introduction*

The introduction covers a statement of the objectives of the paper.

(ii) *The Nature of Pharmaceutical Services*

Pharmaceutical services are defined and the limitations of the scope of the paper are set out; the agencies dispensing prescriptions are enumerated and the claims to professional competence of pharmacists are quoted.

(iii) *Pharmaceutical Manpower*

A brief summary of the five Acts concerned with the sale of poisons and the dispensing of prescriptions of medical practitioners is given. This outlines the legal position of persons who are permitted to keep "open shop" and to compound and dispense prescriptions.

The number of pharmaceutical chemists on the statutory Register is just over 2,000, of whom approximately one third are women. Recruitment in recent years has been insufficient to maintain the number on the Register. Approximately 86 per cent of active pharmacists work in retail shops or as locums. The number of retail chemist shops is just under 1,300 and in most of these only one pharmacist is engaged. About 3,000 people in all are working in retail chemist shops. The average shop in Dublin and in the four provinces has one proprietor with two assistants. Only three firms have more than six shops.

In order to become a pharmaceutical chemist it is necessary to acquire the Bachelor of Science (Pharmacy) degree of the National University, pass an examination in forensic pharmacy conducted by the Pharmaceutical Society of Ireland and to devote one year to practical training. To become an "assistant to a pharmaceutical chemist", permitted to take his place in his temporary absence, it is necessary to serve a three year apprentice-

ship and attend a six month course at the College of Pharmacy. There are 340 such assistants on the Register. In the six years since the degree course was instituted, 89 Irish and 15 overseas students have graduated. Amongst the Irish students, 45 per cent were successful at their first attempt at the final degree examination, while 87 per cent were successful after several attempts. In the last two years, 47 pharmaceutical chemists and 53 assistants registered for the first time. Just over half of all the graduates are now working in retail pharmacies.

(iv) *The Structure of Pharmaceutical Services*

The average sales in retail chemist shops, according to the Census of Distribution increased from £5,000 in 1956 to £9,400 in 1966. The average gross margin earned was 31 per cent in both these years. The average stock held by a retail chemist in 1966 was just under £3,000, the annual rate of stock turnover was 3.3. It is unlikely that in 1966 average profits exceeded £30 per week. About one quarter of all shops had a turnover of less than £5,000 per year, while one third had more than £10,000. The population per chemist shop in Dublin and the provinces is very much the same.

A report by the Pharmaceutical Society in 1967 (Chairman, Mr. M. L. Cashman) estimated that 20 per cent of a retail pharmacy's turnover is derived from prescriptions and 27 per cent from the sale of other human medicines. For prescriptions, pharmacists normally charge 50 per cent on the ingredient cost plus a dispensing fee of 5/-, an average mark-up of 100 per cent.

About one third of the population are entitled to free general practitioner services and receive free medicines, the proportion being much lower in the larger towns. The expenditure on medicines per person covered by the General Medical Services Register in 1968/69 differs widely. It was highest in Dublin (£3/10/-) and lowest in Mayo (18/-). The expenditure on medicines for the lower income groups has increased steeply over the last six years and is now about £2m.

Local health authorities purchase the more important medicines under a central purchasing scheme. On average they pay at a rate of 20 per cent below wholesale prices. The cost of a pre-

scription for which a member of the public pays 20/- in a retail pharmacy, to the local authority is about 10/2. Stocks of medicines in dispensaries are not subject to any stock control. No records are kept of the types of medicines which are dispensed.

Expenditure on medicines in local authority hospitals in 1967/68 was rather more than £½m. and about the same amount was spent on patients in voluntary hospitals. Some voluntary hospitals, but not all, dispense medicines to out-patients at cost plus a small service charge. This service is not provided by local authority hospitals.

Private expenditure on prescriptions in 1966 was in the region of £1.5m. and £2.2m., approximately 15/- to 23/- per head of the population not covered by the lower income group services. If the number and ingredient cost of prescriptions and dosage had been the same for those paying for their own medicines as for the lower income groups, expenditure would have been £7.4m.; had it been the same as in Northern Ireland, it would have been £9.7m.

Private expenditure on proprietary drugs and household remedies was estimated in 1966 to be about 86/- per family, about 21/6 per head.

The Household Budget Inquiry 1965/66 shows that expenditure on medicines by the professional and managerial classes is about two and a half times that of unskilled and semi-skilled workers.

(v) *Pharmaceutical Services in Other Countries*

A comparison of pharmaceutical services in Ireland with those of Northern Ireland, Denmark and Canada shows that: (1) in Ireland and Canada there are no restrictions on pharmacists' charges while in Northern Ireland and Denmark there is a control on the vast majority of prescription charges. In Ontario, a voluntary drug pricing programme will encourage uniform controlled methods of charging. (2) In Canada almost all, and in Ireland two-thirds, of the population pay the full cost for prescriptions. In Denmark and Northern Ireland, the cost is mainly borne by public funds. (3) Only in Denmark are retail pharmacies licensed. In Northern Ireland, a restriction on entry

to the General Health Services Board's list has recently been recommended by an official committee and this is also the policy of the Pharmaceutical Society of Ireland. (4) The population per retail pharmacy is 2,300 in the Republic and Northern Ireland. It is 4,200 in Canada and 14,000 in Denmark. However, the average sales of retail pharmacies in Northern Ireland in 1966 were two-thirds as great again as in the Republic. (5) Cost and number of private prescriptions in the Republic is not known; in the other three countries these two items increased appreciably over the last 10 years though at different rates. (6) In these three countries in 1967 the cost of prescriptions per head was much the same, about £4. In Ireland, it was well below half of this amount. (7) In all four countries pharmacists require a university degree. The degree course is shortest in the Republic.

(vi) *Pharmaceutical Services—Some Issues*

The issues discussed are: (1) the education of pharmacists; (2) the income from prescriptions; (3) the sale of non-ethical proprietary drugs and (4) self-treatment.

The arguments for university education of pharmacists are presented. The work of retail pharmacists is outlined and related to their education. A lowering of present educational standards is not considered practicable even if it was desirable. The present system has three advantages—a relatively short university course, the possibility of obtaining honours science degree standard by a further year's study after graduation and a course for pharmaceutical assistants of six months academic and three years practical training which qualifies them to dispense.

In the Grosset Report on the Hospital Pharmaceutical Services in Scotland emphasis is placed on the provision of training for, and the introduction of, trained auxiliary staff to hospital pharmacies. A ratio of one pharmacist to supervise two assistants was recommended.

It is advocated that the education of pharmacists should be financed in the same way as that of doctors and dentists. The case for all professions contributing to the cost of education of their successors is briefly outlined.

There is little evidence for the Republic to show by how much

the price of prescriptions has increased, but in Northern Ireland it has risen from 6/3 in 1956 to 13/9 in early 1969, an increase of 120 per cent. The cost of medicines for persons covered by the General Medical Services Register in the Dublin Health Authority increased by almost two and a half times between 1961/62 and 1967/68.

Receipts from prescriptions in the 1960's must have increased very much more rapidly than the general price level. The margin earned by retail pharmacists in Northern Ireland is approximately 41 per cent, in Canada 65 per cent, and in Ireland 100 per cent. The justifications given for a high margin on dispensing are losses due to (1) manufacturers frequently introducing new ethical preparations and (2) in the making up of a prescription ingredients may be required which can be purchased only in minimum quantities.

In model conditions one pharmacist and two assistants can dispense 49,500 prescriptions per annum. The cost of this team would be £5,300 on assumptions which are light in respect of work load, liberal as regards remuneration and conservative as regards expenses. This would be equivalent to about 24 per cent of ingredient cost. In Ireland at present, the margin charged on this number of prescriptions would be about £23,000.

Excluding the lower income group, the average population per retail pharmacy is some 1,600. An estimated average expenditure of not more than 23/- per year per person would allow for about 1.7 prescriptions per head, requiring about 4½ hours per week of the pharmacist's time.

The Irish Drug Association, in the interest of its members, endeavours to confine the sale of proprietary medicines and infant foods to retail pharmacies and to standardise the profit margin at 50 per cent on wholesale price. As a result, price competition between pharmacists is rare, but an increasing number of proprietary medicines are sold at lower prices in chain-stores and in other retail outlets.

Self-treatment plays a substantial role in the life of most people. Treatment by medical practitioners for every ailment is preferable but impossible anywhere in the world. The efficacy of self-treatment is increased and its dangers are minimised if the public are educated in how to apply it. Oral advice of this kind to the

public offers extended scope for the professional competence of the pharmacist.

The decision to restrict the sale of particular medicines to retail pharmacies should be based on evidence produced by the experts but taken by the representatives of the public.

(vii) *Future Developments*

In the White Paper on Health (January 1966), the Government accepts that if a choice of doctor is given to persons with full eligibility, it would be preferable if they were entitled to get their drugs, medicines and appliances in retail pharmacies, as do private patients, or from the doctors themselves in areas where there are no pharmacies. The Health Act 1970 implements most of the proposals of the White Paper. It is hoped to negotiate with the retail pharmacists that they dispense to persons with full eligibility free of charge from their own stocks. They will be recompensed for the cost of ingredients and paid a fee for their services. For persons with limited eligibility there are proposals in the Health Act to recompense them in whole or in part if they spend over a certain amount on medicines in a specific period of time—£2 a month has been suggested by the Minister.

Under the Act, health authorities are authorised to supply drugs free of charge for long-term diseases and disabilities to all income groups.

The official estimate of the additional cost of these schemes is between £½m. and £1m., but this is most probably an underestimate.

The outstanding characteristics of pharmaceutical services in Ireland appear to be the low number of prescriptions per head, the low number of hours the qualified pharmacist spends on dispensing, the high margin on prescriptions, the relatively large expenditure on non-prescribed proprietary drugs and household remedies and the very low turnover of the average retail pharmacy.

The low number of prescriptions may be a reflection of a low consultation rate or the prescribing habits of doctors. When dispensing for persons with full eligibility is transferred to retail pharmacies the time spent on dispensing will increase substantially. The high margin on prescriptions is due to lack of

competition and the small number of prescriptions which increase overhead costs. At present, charges on prescriptions are fairly uniform throughout the State, but it would be more reasonable if the margin on prescriptions was related to cost of service rendered. When pharmacists agree on uniform charges, prices have to be high enough to allow operation in the least favourable conditions.

The duties of the State in respect of pharmaceutical services might be said to include: (1) to restrict the sale of toxic and dangerous drugs; (2) to assure safe distribution by adequately trained personnel; (3) to encourage a system by which medicines are available everywhere in the State; (4) to subsidise medicines so that those who need them can have them; (5) to ensure that public funds are spent effectively and honestly and (6) that medicines are available at fair and reasonable prices.

Under these headings reference is made to the following points: regulations about the quality, purity and safety of medicines offered for sale and measures to enforce adherence to the formula approved; changes in the ratio of pharmaceutical chemists to pharmaceutical assistants with emphasis on increasing the number of the latter; strict enforcement of adherence to regulations restricting the sale of certain medicines; the excessive number of retail pharmacies; possible new channels of distribution by mobile pharmacies or by collecting prescriptions left at local village stores; importance of framing regulations to avoid abuse by retail pharmacists supplying medicines to persons with full eligibility and need for test checks on prescriptions.

(viii) *Proposals for Reducing the Cost of Medicines*

Four measures for reducing the cost of medicines are considered—increased sales of non-branded standard preparations, new agencies for dispensing prescriptions, a control of drugs scheme and licensing of retail pharmacies—but none of those are thought to be panaceas.

The sale of non-branded medicines might be encouraged by a system of quality control which would make such preparations more acceptable to retail pharmacists. Several other possibilities of increasing the sales of non-branded preparations are mentioned but considered impractical.

The high cost of prescriptions in Ireland is due to the large margin between ingredient cost and prices. This is the result of the *esprit de corps* of retail pharmacists and the excessive number of retail outlets. In some countries there is a trend towards a three-tier system of distribution. One is a pharmacy restricted mainly to the dispensing of prescriptions, a second is like the present-day retail pharmacy and a third outlet is chain-stores and general grocery shops.

It is suggested to set up non-profit making, non-subsidised pharmacies which charge prices lower than those charged in retail pharmacies. It would be preferable if these were organised by voluntary organisations but they could also be established by a state-sponsored body. They would advertise and compete freely with retail pharmacies, thus differing from dispensaries which had a captive clientele.

In Northern Ireland and Great Britain, doctors enjoy complete clinical freedom in prescribing but are encouraged, with indifferent success, to prescribe standard preparations. In Denmark there is a scheme to try to influence doctors to prescribe less expensive medicines. It is difficult to see why unfettered prescribing deserves a higher priority than other medical measures which are in the patient's interest. In Ontario a system has been introduced to encourage the dispensing of less expensive preparations.

As compared with other countries the average Irish retail pharmacy dispenses few prescriptions and has a low turnover. This makes for relatively high overhead costs per unit of sales and underutilises the professional skill of the pharmacist. A reduction in the number of retail pharmacies in most local areas would not significantly inconvenience the public. Licensing of pharmacies would require control of prices. As from April 1971 the margin on almost half of all prescriptions will (after negotiation) be fixed by the State. Under the Health Act the Health Boards will have a contingent liability for all medicines purchased by the public. This raises the question whether the margin on all prescriptions should be agreed between the State and the Pharmaceutical Society of Ireland. Licensing without compensation would be inequitable, with compensation expensive. An optional surrender of licences is suggested.

PHARMACEUTICAL SERVICES IN IRELAND

I. INTRODUCTION

This is the second of several papers which will be concerned with various branches of the health services. The object of these papers is fourfold:—

1. To describe the service and attempt an evaluation of its costs and benefits.
2. To compare the service with those of other countries.
3. To ascertain whether changes in the organization of the service might increase the benefit it renders without appreciably increasing costs.
4. To assess the benefits which might be obtained if increased expenditure was to be devoted to the services.

A brief outline of the economic and social environment in which Irish health services operate is contained in "Dental Services in Ireland".¹

II. THE NATURE OF PHARMACEUTICAL SERVICES.

The term pharmaceutical services is by no means self-explanatory. This study is concerned only with those activities which take place after the delivery of medicinal substances by manufacturers or wholesalers to retail pharmacists, hospitals, medical practitioners or local authorities. Three other important and interesting topics which might be covered by a more comprehensive definition of pharmaceutical services are outside the scope of this study. These are: (1) the pharmaceutical industry

¹Ar.

and systems of quality control prior to the wholesaling stage; (2) the so-called "drug problem", the misuse of amphetamines, L.S.D., marijuana and other dependency producing narcotic drugs; (3) the prescribing skill of doctors, whether the drugs prescribed produce the desired results with the greatest possible benefit and the least possible harm at the minimum cost.

Pharmaceutical services are concerned with the purchase, storage and preparation, where appropriate, of medicinal substances, including diagnostic agents and medical gases. Another aspect of the services is the responsibility of ensuring that the medicines supplied have maintained their quality and potency and are handed over in the correct quantities. The keeping of statutory records relating to drugs and the adherence to forensic regulations should also be considered as part of these services.

Medicinal substances may either be dispensed on the prescription of a medical practitioner or be sold without prescription to any member of the public, unless the sale of a particular substance is restricted by law. In Ireland at present, drugs are dispensed by five agencies. First, retail pharmacies which account for most transactions; second, health authority dispensaries, which in the large towns supply drugs without charge to persons entitled to them under the Health Acts, mainly the lower income groups; third, hospital pharmacies, which dispense for in-patients as well as out-patients in certain circumstances; fourth, medical practitioners who provide drugs direct for their patients, this includes District Medical Officers in rural areas and the smaller towns; fifth, some large firms make arrangements to provide drugs (from their own pharmacies at cost prices) on doctors' prescriptions for employees and their families. In addition, a small but not insignificant amount of drugs are presented as free samples to medical practitioners by drug manufacturers.

Of these only retail pharmacies supply drugs which are not prescribed by a doctor or a dentist. The typical retail pharmacy dispenses prescriptions and sells proprietary drugs and household remedies as well as cosmetics and photographic requisites. Proprietary drugs, the sale of which is not restricted by law, can also be purchased in chain stores and other retail outlets.

Pharmacists claim and are trained to have professional competence in advising medical practitioners and allied professions

on "dosage, approved and other names for pharmaceutical preparations, the effect of different formulations on therapeutic activity, the influence of particle size on the rate and extent of pharmaceutical action, the physical, chemical and pharmacological properties of pharmaceutical specialities, the use of drugs as stimulants or inhibitors of drug metabolism and therapeutic incompatibilities".¹ The important question of the extent to which advice of this nature is requested or given by either retail or hospital pharmacists does not appear to be covered in either Irish or British literature. One exception to this is Dr. Bradshaw who writes: ". . . as regards the great majority of purchases of patent medicines in a pharmacist's today, advice is neither offered nor asked for nor desired."² In the Symposium on "Drugs: Their Development, Use and Control" held at the University of Dublin in 1968, a dozen distinguished speakers participated. None referred to pharmacists, other than medical representatives, giving any advice on drugs to medical practitioners. In as far as it is given, it should be considered a part of pharmaceutical services.

III. PHARMACEUTICAL MANPOWER

The Pharmaceutical Register

The classes of persons who may keep open shop for the compounding and dispensing of medical prescriptions and the sale of poisons have been regulated by five acts during the last hundred years. Prior to 1875, licensed apothecaries had a legal monopoly in the retail sales of medicines. In that year the number of apothecaries was considered too small to provide a satisfactory service in all parts of the country. The main object of the Pharmacy Act (Ireland) 1875 was to extend the classes of persons permitted to retail medicines. For that purpose the Act set up the Pharmaceutical Society of Ireland which was given the task of keeping a register of pharmaceutical chemists and of making regulations for the conduct of examinations of persons wishing to become registered as pharmaceutical chemists.

¹B1.

²B2.

A shortage of this new grade of pharmaceutical practitioner led in 1890 to an amendment of the law to provide registered druggists who were permitted to sell and mix poisons, but not to dispense prescriptions. The same Act also provided for the legal recognition of "assistants to pharmaceutical chemists". Assistants who had passed an examination conducted by the Pharmaceutical Society were recognized as competent to transact the business of a pharmaceutical chemist in his temporary absence, but were not entitled to conduct or manage a business or keep open shop on their own account. The term "temporary absence" is not defined in regulations made by the Pharmaceutical Society nor has it been tested in the Courts.

Prior to the Dangerous Drugs Act of 1920, responsibility for the control of poisons and dangerous drugs lay primarily on the pharmacist. He had to ensure as a safeguard against criminal abuse that certain legal conditions were fulfilled prior to the sale of listed preparations. This Act introduced a new concept of control in realizing the necessity to protect the purchaser against self-dosage. Primary control was transferred to the prescriber and listed preparations could only be issued on prescriptions.¹

In 1951 another amending act was passed. This provided for the eventual disappearance of registered druggists and introduced a new grade, that of "dispensing chemist and druggist". Entry to the new grade was restricted to druggists who had passed a special examination set by the Pharmaceutical Society. Those who passed were permitted to compound and dispense prescriptions and for all practical purposes had all the rights and duties of pharmaceutical chemists. The most recent Pharmacy Act, that of 1962, strengthens the powers of the Pharmaceutical Society in a number of respects but does not alter to a significant degree the classes of persons who are permitted to dispense prescriptions.

All five acts are concerned with the sale of poisons and the dispensing of prescriptions of medical practitioners; they do not restrict or prohibit the sale of non-poisonous therapeutic substances. The sale of any medicine which may legally be sold without a medical prescription is, therefore, not restricted to pharmaceutical chemists. Many thousands of different types of

¹Cr.

“household remedies” and “proprietary” medicines may legally be sold in any kind of shop, including chain-stores, newsagents and grocers. The fact that many are sold only at pharmacies is either due to the marketing policy of their manufacturers or to commercial arrangements made between manufacturers and trade associations. The fact that pharmaceutical chemists enjoy certain exclusive rights and have to be registered puts them in a strong position to bargain collectively with the manufacturers of proprietary medicines.

Numbers and Distribution

The number of pharmaceutical chemists on the statutory Register in December 1968 was 2,065. Of these 1,483 are members of the Pharmaceutical Society and pay an annual membership fee of £7/7/-. The remainder are licentiates who pay a retention fee of £5/5/- to the Society. There are also about 100 licentiates of the Apothecaries' Hall who are permitted to “keep open shop”. Section 22 of the Pharmacy Act, 1875, conferred a right on licentiates of Apothecaries' Hall to be registered as pharmaceutical chemists without further examination. This privilege was revoked by the Pharmacy Act, 1962. Students registered with the Apothecaries' Hall on 31st December, 1962, were allowed eight years in which to pass their Licence Examination (L.A.H.) and to apply for registration with the Pharmaceutical Society of Ireland. It is estimated that less than a score of them actually practise pharmacy. Twenty-five licentiates registered with the Society during the last six years.

In a report prepared by a committee of the Council of the Pharmaceutical Society and submitted to the Minister for Health in July 1967,² statistics are given in respect of the age and sex distribution of pharmacists. These are reproduced in Table 1.

²C2. This Report was produced by a Committee of Members of the Council of the Pharmaceutical Society of Ireland, under the Chairmanship of the then President, Mr. M. L. Cashman, and published in the official journal of the Irish Pharmaceutical Association, Vol. 4, No. 3.

The Cashman Report refers to community pharmacists. In this study the term “retail pharmacist” is used, except in discussing the *Census of Retail Distribution* and the *Fair Trade Commission Report of Inquiry*, when the phraseology used in these reports—retail chemist—is adhered to.

This shows that 35 per cent of all pharmacists are women and of these, some 59 per cent are below the age of 45 and some 16 per cent below 35 years. There appears to have been a trend over the last few decades for the proportion of women pharmacists to increase.

Some 12 per cent of the men are above the normal retirement age of 65, and amongst those under that age 46 per cent are below 45. Recruitment in recent years has certainly been insufficient to maintain the present number on the Register. There are only 92 men in the age group 30-35 compared with 225 in the age group 40-45. The same report also makes estimates of the occupational distribution of pharmacists. About 10 per cent of all on the Register are thought to be inactive. Some 80 per cent of the remainder work in retail shops, 6 per cent act as locums, five per cent work in hospitals and public dispensaries, about the same proportion are medical representatives and some four per cent are engaged in the pharmaceutical industry.

The report gives the number of retail pharmacies in the State as 1,282. This would indicate that in approximately sixteen out of every 100 pharmacies there is more than one registered pharmacist.

TABLE 1: *Age and Sex Distribution of Registered Pharmacists.*

1967			
<i>Age</i>	<i>Women</i>	<i>Men</i>	<i>Total</i>
21-24	10	7	17
25-29	33	58	91
30-34	77	92	169
35-39	144	158	302
40-44	169	225	392
45-49	103	191	294
50-54	63	159	222
55-59	50	175	225
60-64	45	114	149
65-69	26	72	98
70-74	4	44	48
75-	6	45	51
Total	728	1,340	2,068

Source: Official Journal of the Irish Pharmaceutical Association, Autumn 1968. Vol. 4. No. 3.

The pharmaceutical Register for 1968 shows 319 "assistants to pharmacists" (qualified assistants) who are competent and permitted to dispense prescriptions, approximately one for every four pharmacists. The estimated number of chemist shops according to the Census of Distribution figures in 1966 was 1,233. The Census gives the number of persons engaged in retail chemist shops as 3,039. Table 2 shows the distribution of retail chemist shops and persons engaged in Dublin and the four provinces. From this it can be seen that the number of persons engaged per chemist shop in the five regions is quite small and ranges between 2.5 and 3.3, the average shop having a proprietor and two assistants. The average shop in Dublin is somewhat larger than in the provinces. The sales per person engaged are also rather similar in the five regions; in Ulster (part of) they are 11 per cent below, and in Dublin six per cent above, the national average.

The typical retail pharmacy is managed by its proprietor. There is one company with 17 shops, one with eight and another with six. All the remainder, with one or two possible exceptions, are in single ownership.

Education

The Pharmacy Act (Ireland), 1875, empowered the Pharmaceutical Society to make regulations for the examination of persons wishing to become registered as pharmaceutical chemists, but did not impose on the society an obligation to provide courses in preparation for such examinations. All the same, the society conducted courses of lectures and "practicals" as from 1879. Until 1951, these courses which were held in Dublin were compulsory and part-time. They were supplemented in some subjects, such as chemistry and botany, by courses which students took at Universities or technical institutes.

In 1952, the Society established the College of Pharmacy and instituted a two-year compulsory full-time training course. Three years practical training in an approved pharmacy and the successful completion of the course were the requirements for registration as a pharmaceutical chemist. In 1961, the standard required for registration was raised again. Encouraged by the

Pharmaceutical Society, the National University instituted a degree course in pharmacy.

As from 1961 a student desiring to become a pharmaceutical chemist must:—

- (1) Enrol at University College, Dublin, for a three-year course of studies leading to the degree of Bachelor of Science (Pharmacy).
- (2) Register with the Pharmaceutical Society of Ireland before commencing the second year of the course.
- (3) Devote one calendar year to practical training in an approved pharmacy or in a hospital pharmacy or in a laboratory under the personal supervision of a registered pharmacist.

TABLE 2: *Number of Retail Chemist Shops and Numbers Engaged, 1966.*

Chemist shops	Persons Engaged†		Sales per Person Engaged‡	
	Number	Number	Per shop	£
Dublin*	293	962	3.3	3,331
Rest of Leinster	225	635	2.8	3,254
Munster	309	939	3.0	3,142
Connacht	123	304	2.5	2,891
Ulster (part of)	75	199	2.7	2,800
Total	1,025	3,039	3.0	3,135

*Includes Dublin City and Suburbs and Dun Laoire Borough and Suburbs.

†Full-time equivalents counting two part-time as one full-time.

‡Includes medicines as well as all other goods sold in chemist shops.

Source: *Census of Distribution, 1966*, including only establishments participating in the Census.

- (4) Pass an examination in forensic pharmacy conducted by the Pharmaceutical Society of Ireland, after the completion of practical training.

Students taking the first year of their degree course at University College, Dublin, where with other first year science undergraduates they study experimental physics, chemistry, biology and mathematics. Three-quarters of the second and third year of the course is centred at the College of Pharmacy and one quarter at the Department of Pharmacology, University College, Dublin. The professional course in the second and third year covers pharmaceutics, pharmaceutical chemistry, pharmacology and pharmacognosy. In addition students are required to attend a course in microbiology.³

The regulations which a student pharmaceutical assistant has to satisfy for preliminary registration with the Pharmaceutical Society of Ireland have changed in recent years. Prior to 1967 they were identical to the matriculation requirements for an undergraduate wishing to take the B.Sc. (Pharmacy) degree. As from 1970 a student will have to produce evidence that he has passed the Leaving Certificate Examination of the Department of Education in English, Irish, Mathematics and two other subjects. The entrance to the degree course requires both a pass in a foreign language and a pass at honours level in at least two of the five subjects on the Matriculation syllabus. In addition, a student pharmaceutical assistant must:—

- (1) Serve a period of three years as an apprentice to a pharmaceutical chemist.
- (2) Attend the Pharmaceutical Assistants' Course at the College of Pharmacy, Dublin, which commences in the month of October each year and terminates the following April.
- (3) Pass the Pharmaceutical Assistants' Examination.

The assistants' course covers pharmaceutics, pharmacognosy and forensic pharmacy and includes a special course in chemistry, all of which are studied at a distinctly lower academic level than for the degree course.

³The degree of reciprocity between Irish and British qualifications is more limited for pharmacists than for dentists and medical practitioners. Irish registered pharmacists may not dispense medicines in the United Kingdom, but they may be employed in all other branches of pharmacy such as research, teaching and the pharmaceutical industry. British registered pharmacists may not dispense in Ireland unless they are accepted to the Register by making special application.

TABLE 3: *B.Sc. (Pharmacy) Degree Examination Results* and New Licence Registrations with the Pharmaceutical Society of Ireland, 1964-1969*

Year	First Attempt at Degree Examination		Success at First Attempt		Success at any† time up to 1969		Students Graduating in that Year				New Licence Registrations		
							Irish		Overseas		Pharmacists‡	Apothecaries	Assistants
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women			
1964	13	7	8	2	12	7	8	2	1	—	28	12	19
1965	13	10	5	4	10	8	7	8	1	—	23	5	19
1966	7	10	3	4	6	9	8	6	1	—	24	3	21
1967	7	8	5	3	6	8	9	8	4	2	36	—	26
1968	9	7	3	4	7	6	5	10	4	—	25	3	25
Sub-Total													
1964-1968	49	42	24	17	41	38	36	35	11	2	136	23	110
1969	8	11	6	4	6	4	10	8	1	1	22	2	28
Grand Total	57	53	30	21	47	42	47	42	12	3	158	25	138

*Figures in Columns 2-9 refer to Irish Students only, i.e. those having their permanent address in the State.

†Refers to students who first registered in year of Column 1.

‡Includes non-degree students who passed the Society Diploma Examination.

Source: Broadsheets, National University of Ireland, 3 February 1970.

Personal communication from the Pharmaceutical Society of Ireland, 20 February 1970.

The number of Irish students who graduated in pharmacy since the degree course was instituted, in the six years up to 1969, was 89. Of these 42 were women (see Table 3). In addition 12 men and 3 women from overseas obtained a degree. Between 1964 and 1968, 91 Irish students took the final degree examination, of these, 79 had passed by 1969. However, only 41 had been successful at their first attempt. The success rate for students passing at the first attempt was, therefore, 45 per cent—49 per cent for men and 41 per cent for women, while the rate of students ultimately passing after several attempts was 87 per cent—84 per cent for men and 90 per cent for women. Another five students who had attempted the degree examination, at a later stage passed the Diploma Examination of the Society.

A detailed study of the degree examination results shows that the 79 students who graduated during the first five years of the degree course sat an average of about one and two-thirds final degree examinations, while the 91 students who made a first attempt at the finals during these years sat an average of just over two examinations.

Amongst the 110 students who registered for the final degree examination between 1964 and 1969, 75 did so two years after completing their first year examination, 29 three years and 6 four or more years later. The average was 2.4 years.

These rather disappointing examination results are partly a continuation of the high failure rates which had been experienced in the immediately preceding diploma course.

In the four years up to 1963 the average success rate in the diploma examination of all students sitting the examination (Irish and overseas, first attempts and re-sits) was 44 per cent.⁴ However, only four per cent of the students who sat the diploma examination during these years failed ultimately to qualify for academic reasons. A further five per cent either dropped out for non-academic reasons or qualified as pharmaceutical assistants.⁵

Irish undergraduates registering for the B.Sc. (Pharmacy) Degree between 1961 and 1967 had, on the whole, school leaving records which were not encouraging. As many as 80 per cent had only a pass in the Leaving Certificate. Many of them showed

⁴C3.

⁵C4.

themselves to be of exceptionally low academic standard in the first year of the science course.

There is some evidence that the failure rate amongst students, one of whose parents was a pharmacist, was higher than amongst other students. Approximately half the students entering the second year of the degree course had a parent who was a pharmacist. It is generally expected that the increase in the matriculation qualification requirements for all students at University College, Dublin, will result in more favourable examination success rates in future.

The total number of pharmaceutical chemists registering for the first time in the six years between 1964 and 1969 varied between 22 and 36 per year, that of "pharmaceutical assistants" varied between 19 and 28 per year. The annual number of assistants registering rose steadily from 247 to 340 in the period. In the last two years for which figures are available, 1968 and 1969, 47 pharmaceutical chemists and 53 assistants registered for the first time.

The College of Pharmacy had in 1969 a full-time staff of one professor and eight lecturers who are responsible for the teaching of pharmaceutics, pharmaceutical chemistry, pharmacognosy and forensic pharmacy. In addition, three professors and four lecturers who are on the staff of University College, Dublin, are responsible for pharmacological physiology and pharmacology, and medical and industrial microbiology.

The College of Pharmacy was financed in 1967/68 by fees from students of £4,130, a contribution from the Pharmaceutical Society of £13,576 and a grant from the Department of Education of £18,000. In this year, therefore, approximately half of the expenditure of the college was borne by public funds, over one tenth by student fees and the remainder by the Pharmaceutical Society. The cost per place per year, counting the student pharmacists' assistants as half, was about £540.

In 1968/69 the Department increased the grant to £23,000. The first year of the degree course which is taken at University College, Dublin, is financed on the same basis as all other university courses.

Amongst the 89 Irish students who graduated between 1964 and 1969, the employment position of 77 is known to the College

of Pharmacy—retail pharmacy, 43; hospital and local authority pharmacies, 10; pharmaceutical industry (production), 9; medical representatives, 7; academic teachers, 5; biology teachers, 2; National Drug Advisory Board, 1.⁶

IV. THE STRUCTURE OF PHARMACEUTICAL SERVICES.

Retail Pharmacy

In 1957 the Fair Trade Commission published a report on an enquiry which they had held under Section 7 of the Restrictive Trade Practices Act, 1953, "into the conditions which obtain in regard to the supply and distribution by wholesale and by retail, of proprietary and patent medicines and infant foods, and medical and toilet preparations".

This report contains much information about pharmaceutical retailing and gives a summary of the evidence given to the Commission. The Commission estimated the size of the home market for medical preparations in 1954, at ex-factory and c.i.f. (cost, insurance, freight) prices, as £2m. On the same basis the market by 1966 had increased to £5½m. If, following the Commission, the remuneration of agents for imported goods is taken to be 5-10 per cent off the price of the wholesale trade, the wholesale discount is taken at about 12½ per cent off the price to the retailer and the retailer's gross margin at about 33½ per cent off his selling price, then the retail selling value of medical preparations for human and veterinary use increased from about £3½m. to £9m. It is not possible to distinguish in the statistics between human and veterinary medicines. This, however, is a rather notional figure as a large proportion of all human medical preparations are not distributed by retail pharmacists, but by hospitals, local health authority dispensaries and by District Medical Officers, as well as by chain-stores and other retail outlets.

The Central Statistics Office conducted a census of distribution in 1956 and 1966; these are estimated to have covered 83 per cent and 85 per cent of all establishments.

⁶C3.

In Table 4 it is shown that average sales for chemist shops, including medical preparations as well as other goods sold, increased from £5,038 in 1956 to £9,405 in 1966. (If it is assumed arbitrarily that the average sales of shops not participating in the census were three-quarters that of the participating ones, then the total turnover increased from £6.4m. in 1956 to £11m. in 1966.)

Gross margin as a proportion of sales (see Table 5) was higher in chemist shops than in other retail outlets. It remained stable at 31 per cent between 1956 and 1966. This compares with a margin of 19-22 per cent for hardware during the same period. Chemists' wages and salaries were a lower proportion of total sales in 1966 than they had been in 1956. At 10 per cent they were the same as for hardware stores and not much higher than the average for all shops. Gross margin after deduction of wages and salaries (remainder) was higher (more than half as great again) in chemists' shops than any other type of retail outlet. This remainder has to cover rent, rates, heating and lighting, cost of holding stocks and proprietor's profit.

The rate of turnover of stock was rather slower than in most other retail shops. The rate, however, shows quite a distinct increase since 1956 (about one sixth), and in 1966 for chemists' shops was 3.3. The average stock held by a retail chemist in 1966 was just under £3,000 and assuming that the whole of this has to be financed by him and none of it by suppliers' credit, then at a rate of interest of 10 per cent, the cost of holding stock would be £300, say about 3 per cent of sales turnover.¹

In 1966, average wages and salaries paid were £948 per chemist shop. Between 1956 and 1966 they increased by 56 per cent while sales increased by 87 per cent. Average wages per shop in the five regions for both census years show very large differences in spite of the small variations in the number of persons engaged per chemist shop. This will partly be due to the number of pharmaceutical chemists and qualified assistants employed being larger in Dublin than in the other regions. No explanation suggests itself for the exceptionally low average wages and salaries in Connacht in 1966. The average profit of

Retail pharmacists receive at least one month's, and possibly up to three months', credit from their suppliers.

TABLE 4: Average Sales and Gross Margin Components per Retail Chemist Shop

	Total Sales		Gross Margin											
			Total				Wages and Salaries				Remainder			
			1966		1956		1966		1956		1966		1956	
	1966	1956	£	% Sales	£	% Sales	£	% Sales	£	% Sales	£	% Sales	£	% Sales
Dublin*	10,993	6,752	3,628	33	2,183	33	1,311	12	988	15	2,317	21	1,195	18
Rest of														
Leinster	9,111	4,638	2,684	29	1,422	31	822	9	436	9	1,862	20	918	29
Munster	9,427	4,551	2,828	30	1,319	29	913	10	496	11	1,916	20	895	19
Connacht	7,228	3,681	2,073	28	1,145	31	528	7	319	9	1,545	21	826	22
Ulster (part of)	7,560	3,771	2,253	30	1,120	30	760	10	337	9	1,493	20	783	21
Total	9,405	5,038	2,892	31	1,576	31	948	10	606	12	1,943	21	970	19

*Includes Dublin City and Suburbs and Dun Laoire Borough and Suburbs.

Note: This table is similar to Table 6 of the *Fair Trade Commission Report of Enquiry* into the conditions which obtain in regard to the supply and distribution of Proprietary and Patent Medicines and Infant Foods and Medical and Toilet Preparations, 1953.

Source: *Census of Distribution*, 1966 and 1956.

TABLE 5: *Gross Margin and Rate of Turnover of Various Types of Retail Shops*

Description of Business	Gross Margin						Rate of Stock Turnover*	
	Total		Wages and Salaries		Remainder			
			As Percentage of Sales					
	1966	1956	1966	1956	1966	1956	1966	1956
16 All Shops	21	18	8	8	13	11	6.6	6.1
Chemist	31	31	10	12	21	19	3.3	2.8
Grocery	15	14	4	4	10	9	10.8	11.4
Tobacco, Sweets and Newspapers	17	17	5	5	13	13	8.6	9.4
Hardware	22	19	10	9	12	10	3.9	3.3

*Ratio of opening stock plus purchases less closing stock to the average of opening and closing stock.

Note: Because of rounding-off, Wages and Salaries plus remainder percentages may not add up to Total Gross Margin percentage.

Source: *Censuses of Distribution 1956 and 1966.*

proprietors, considering the standard of education of a pharmaceutical chemist, is fairly moderate. In 1966 the gross margin, after allowing for wages and salaries, was £1,943. After deducting rent, rates, heating and lighting and cost of stocks, an average net income of £30 per week seems a reasonable guess.

In February 1970 the minimum weekly wage scales agreed between the Irish Drug Association and the Irish Union of Distributive Workers and Clerks for pharmaceutical chemists four years after registration was £23/9/3 for a man and £21/5/6 for a woman. The actual rates paid in Dublin at that time were, however, in general appreciably higher. The minimum scales for assistants to pharmaceutical chemists, five years after qualifying, were £18/11/- for a man and £16/18/3 for a woman. Plus-payments to qualified assistants appear to be much rarer than to pharmaceutical chemists. Both scales, in any case, can not be described as other than moderate.² Nor can the differential in pay between pharmaceutical chemists and qualified assistants be considered as excessive.

Amongst the 83 per cent of (1,025) chemist shops who responded to the Census of Distribution 1966, about one quarter had turnover of less than £5,000. These 243 shops between them had less than 9 per cent of all sales while the 32 per cent of all shops with a turnover of more than £10,000 had 56 per cent of all sales.

The population per chemist shop is estimated to be 2,339, a small increase compared with 1956. (See Table 6.) In 1966, the population per chemist shop in the Dublin conurbation had increased by 22 per cent over what it had been in 1956. It was, however, still slightly less than it was in the provinces. The number of persons per shop in the richer Leinster and Munster is very similar to what it is in Connacht and Ulster.

The Census of Distribution does not distinguish the different groups of commodities sold by chemists. The Cashman Report quotes a survey by the Practice of Pharmacy Committee of the Pharmaceutical Society of Ireland. This suggested that approximately 20 per cent of a retail pharmacist's income was in 1965

²The average earnings of industrial workers in transportable goods industries in September 1969 are estimated to have been £19/17/- for a man and £10/3/- for a woman.

TABLE 6: *Population and Number of Retail Chemist Shops.*

	<i>Number of shops</i>		<i>Population (000's)</i>		<i>Population per Shop</i>	
	1966	1956	1966	1956	1966	1956
Dublin*	337	369	735	649	2,181	1,759
Rest of Leinster	280	280	679	690	2,425	2,464
Munster	370	406	859	877	2,322	2,160
Connacht	160	171	402	446	2,513	2,608
Ulster (part of)	86	96	208	236	2,419	2,458
Total	1,233	1,322	2,884	2,898	2,339	2,192
No. participating in Census	1,025	1,119				
No. participating as % of Total	83	85				

*Includes Dublin City and Suburbs and Dun Laoire Borough and Suburbs.

Source: Number of retail chemist shops known to C.S.O. including responding and non-responding.

Population from Census of Population, 1966, 1956.

derived from compounding and dispensing prescriptions, 27 per cent from the sale of medicines for human use, 21 per cent from the sale of veterinary medicines and the balance of 32 per cent from the sale of cosmetics, photographic and similar goods. This survey, however, estimated the gross turnover per shop at only £6,923 while the Census of Distribution in the following year showed a figure of £9,405. The sales analysis in the Cashman Report can, therefore, not be accepted without some reservation. In as far as the proportions are right, though the total is underestimated, it deserves to be noted that the sale of proprietary medicines and household remedies is one third higher than income from charges for prescriptions, and the sale of veterinary medicines also slightly exceeds the income from prescriptions.

The profit margin on goods sold by retail pharmacists is fairly uniformly 50 per cent on wholesale price. A margin of only 33 per cent on infant foods is considered rather low. For prescriptions there is a charge of 50 per cent on the ingredient

cost plus a dispensing fee which at the present time is 5/-, i.e. for a medicine bought by the pharmacist for 10/-, the retail price is 20/-, a gross margin of 100 per cent.

In addition, the customer is liable to pay turnover tax at 2½ per cent of the retail price on all medicines for human consumption.³ The retail price for this purpose includes the prescription fee of 5/-. Retail pharmacies having total sales exceeding £750 per month pay turnover tax to the Revenue Commissioners. Those having receipts of less than £750 are not liable to pay this tax, but they have to pay the tax on their purchases from wholesalers, importers and manufacturers supplying them.

Wholesale tax at the rate of 10 per cent is levied on all goods, but the following are exempt: "all medicines consumed orally, all medicinal substances for injections, liniments, ointments and balsam whose use is mainly therapeutic and disinfectants and antiseptics". For all practical purposes medicines are exempt.

The above discussion, which is based on the Report of the Fair Trade Commission and the Census of Distribution, looks at a pharmacist very differently from how he sees himself. He sees himself as a professional member of the healing team, not unlike a dentist or a doctor, and considers it quite inappropriate to compare profit margins on the dispensing of medicines with the turnover of retail shops. He does not speak about profit margins and believes not merely that his services are distinct from those of a retailer, but also considers his trading activities as of a different nature. A large proportion of a pharmacist's stocks are held in anticipation of prescription demand and may not be advertised, sold or even offered for sale. To him the fact that the prescription fee is subject to turnover tax appears to be another indication of the failure of public authorities to recognise his profession. This complete negation of the cost factor and concentration on healing, ethics and professionalism may, however, not be financially disadvantageous to him.

Retail pharmacies are open for long hours—9.00 a.m. to 6.30 p.m. on six days a week, plus 11.00 a.m. to 1.00 p.m. on Sundays, a total of 59 hours is not uncommon; even allowing for one half day it is 53 hours per week. This standard of service

³Turnover tax is not levied on medicines for farm animals as this is considered an intermediary rather than a final consumption good.

may be somewhat higher than is necessary. These very long hours make working in a retail pharmacy unattractive for both the pharmacist and his staff. The hours are excessive compared to those of most other professional workers.

Lower Income Group Services.

Approximately 30 per cent of the population, who are "unable to provide by their own industry or other lawful means the medical or surgical treatment or medicines, or medical or surgical appliances necessary for themselves or their dependants", have these supplied free of charge under Section 14 of the Health Act, 1953. This rather archaic definition of eligibility has been re-phrased by the Health Bill, 1969.⁴ Persons belonging to the lower income group who are entitled to free medical services are redefined by the Bill as "persons with full eligibility".

The proportion of the population entitled to free services has increased substantially in recent years. It was only 23 per cent in 1956, rose to 28 per cent in 1958 and was 31 per cent in 1967. The reason for this is not an increase in levels of poverty but is due to two factors—an increased willingness of people to apply for admission to the General Medical Services Register and less stringent rules of admission.

The proportion of the population covered by the Register fluctuates widely between counties. In 1967 it was 49 per cent in Mayo and Roscommon, but only 30 per cent and 32 per cent respectively in Leitrim and Sligo. These differences can not easily be reconciled with differences in general levels of income but appear to be largely due to local and historical factors. In Dublin, at 16 per cent, and in Cork city, at 19 per cent, the proportion of the population covered by the Register is much lower than that in the rural areas.

The rate of change between 1956 and 1967 in the individual counties also differs widely. In counties Meath and Donegal there was an increase from eight per cent to 33 per cent, in Roscommon from 18 per cent to 49 per cent while in Dublin there was actually a small reduction from 17 per cent to 16 per cent. (See Table 7.)

The expenditure on medicines dispensed by the local health

⁴D1.

TABLE 7: *Proportion of the Population on the General Medical Services Register*

	<i>Proportion of the Population Covered</i>					
	1956 %	1958 %	1967 %	1956 Rank Order*	1958 Rank Order*	1967 Rank Order*
LEINSTER:						
Carlow	37	43	46	3	3	2
Dublin	17	17	16	15	18	16
Kildare	21	32	40	12	10	6
Kilkenny	32	44	45	6	2	3
Laoighis	27	31	36	8	11	8
Longford	48	45	45	1	1	3
Louth	14	26	28	17	15	14
Meath	8	17	33	18	18	11
Offaly	27	36	33	8	8	11
Westmeath	36	36	32	4	8	12
Wexford	32	30	39	6	12	7
Wicklow	32	37	34	6	7	10
MUNSTER:						
Clare	16	22	34	16	16	10
Cork	28	29	27†	7	13	15
Kerry	27	32	41	8	10	5
Limerick	28	39	35	7	6	9
Tipperary	33	40	33	5	5	11
Waterford	41	37	36	2	7	8
CONNACHT:						
Galway	21	32	43	12	10	4
Leitrim	9	19	30	18	17	13
Mayo	23	31	49	11	11	1
Roscommon	18	34	49	14	9	1
Sligo	19	28	32	13	14	12
ULSTER (part of):						
Cavan	24	31	32	10	11	12
Donegal	8	16	33	19	19	11
Monaghan	25	41	45	9	4	3
Irish Republic	23	28	31			

**Rank Order*: is the sequence of the proportions—the highest being one and equal proportions being given the same rank number.

†Cork City 18. Cork County 33.

Source: Reports of the Department of Health 1955/56, 1957/58 and *Journal of Irish Medical Association*, August, 1967.

authorities in 1968/69 was almost £2 million. (See Table 8.) This was an increase of 14 per cent over the previous year. The expenditure on medicines per person covered by the Register differs greatly between counties. It was by far the highest in Dublin where it was £3/10/-⁵ and was lowest in Mayo at 18/-. The average for the State was £1/18/-. No ready explanation suggests itself for these differences; for example, why should expenditure per person in Meath be more than twice as high as in Wicklow? In general, expenditure in the towns was higher. This may possibly be related to the smaller proportion of the population in the towns who are entitled to lower income group services.

Expenditure on medicines has greatly increased during the last six years. For the Dublin Health Authority area the increase has been about 320 per cent and for Cork it was slightly over 450 per cent. This increase is accounted for, only in part, by an increase in the number of people entitled to free medicine. In Dublin, the number increased by only 22 per cent while cost per person covered increased from 18/- in 1961/62 to £3/2/- in 1967/68—that is by 248 per cent. During the same period in Cork the number of persons on the Register increased by 12 per cent while cost per person increased from 8/10 to £2/4/- that is by 430 per cent—but even so was in 1968 still substantially lower than in Dublin. (See Tables 9A and 9B.) During these years cost per person showed a continuous increase. The increase could be due to a multiplicity of factors which might have included a larger proportion of those entitled consulting the doctor, an increase in the number of prescriptions per medical consultation and an increase in the cost per item prescribed. The latter may have been the result of an increased use of proprietary medicines and/or the increase in the price of drugs. Unfortunately no statistics are kept relating to any of these factors and it is, therefore, impossible to ascertain their relative importance.

⁵Expenditure on medicines as shown in the Department of Health's records is greater than the expenditure as stated by the Dublin Health Authority. This discrepancy is due to the Department's figures showing payments for medicine made during the year while the Authority's figures give the value of medicines issued to the dispensaries, district medical officers and the public.

TABLE 8: *Expenditure on Medicines by Local Authorities 1967/68 and 1968/69*

County	Expenditure 1967/68	Cost per person covered by G.M.S.R.	Rank order of cost per person	Expenditure* 1968/69
	£,000's	£		£,000's
LEINSTER:	806.2	2.27		950.4
Carlow	20.0	1.30	16	25.9
Dublin	445.3	3.49	1	550.0
Kildare	37.0	1.41	13	42.3
Kilkenny	29.1	1.07	21	30.0
Laoighis	27.5	1.72	9	29.0
Longford	15.3	1.17	19	16.0
Louth	23.1	1.17	19	24.5
Meath	61.9	2.78	2	70.0
Offaly	25.2	1.48	12	30.0
Westmeath	32.2	1.88	8	33.7
Wexford	61.8	1.89	7	65.0
Wicklow	27.8	1.36	14	34.0
MUNSTER:	533.8	1.92		591.6
Clare	55.6	2.23	4	56.0
Cork	221.0	2.41	3	267.0
Kerry	53.2	1.15	20	55.0
Limerick	94.1	1.94	6	100.0
Tipperary	55.0	1.36	14	57.6
Waterford	54.9	2.10	5	56.0
CONNACHT:	223.5	1.29		262.5
Galway	100.6	1.57	10	133.0
Leitrim	11.5	1.25	17	11.5
Mayo	48.4	0.85	22	55.0
Roscommon	32.5	1.19	18	33.0
Sligo	30.5	1.88	8	30.0
ULSTER (part of):	104.5	1.42		109.8
Cavan	22.5	1.31	15	23.0
Donegal	50.8	1.42	13	55.0
Monaghan	31.2	1.51	11	31.8
Irish Republic	1668.0	1.86	—	1,914.3

*Figures for 1968/69 are estimates.

Source: Communication with the Department of Health 18th July, 1969.
Journal of Irish Medical Association, August 1967—re persons on General Medical Services Register.

TABLE 9A: *Expenditure on Medicines per Person on the General Medical Services Register in Dublin 1962-1968.*

Year ending 31st March	Persons on the General Medical Services Register		Expenditure on Medicines		Expenditure per Person		
	000's	Index 1962=100	£,000's	Index 1962=100	£	s. d.	Index 1962=100
1962	113	100	102	100	18	0	100
1963	110	97	128	125	1	3 2	129
1964	104	92	134	131	1	5 10	143
1965	106	94	160	157	1	10 2	168
1966	116	103	211	207	1	16 5	202
1967	128	113	299	293	2	6 10	260
1968	138	122	431	423	3	2 7	348

Note: Expenditure on medicines for Hardship Cases accounted for £14,000 in 1966/67 and £28,000 in 1967/68 of total expenditure for those years.

Source: Communication from the Dublin Health Authority dated: 23rd July, 1969 and 22nd September, 1969.

TABLE 9B: *Expenditure on Medicines per Person on the General Medical Services Register in Cork 1962-1969.*

Year ending 31st March	Persons on the General Medical Services Register		Expenditure on Medicines		Expenditure per Person		
	000's	Index 1962=100	£,000's	Index 1962=100	£	s. d.	Index 1962=100
1962	84	100	37	100	8	10	100
1963	83	99	47	127	11	5	130
1964	82	98	58	157	14	0	159
1965	83	99	81	219	19	7	223
1966	88	105	102	276	1	3 2	264
1967	91	108	154	416	1	13 7	382
1968	93	111	205	554	2	4 0	500
1969	94	112	220*	595	2	6 7	530

Source: Column 2—Letter from the Cork Health Authority dated: 4th September, 1969.

Column 3—Abstract of Accounts, Cork Health Authority (1962-1968), except for the 1969 figure which is the aggregate expenditure of all Dispensary Districts.

Expenditure per person on medicines not only varies widely between health authorities but also between different dispensary districts of the same health authority. In 1967/68 in Dublin the average cost per person entitled was £3/2/- and ranged from £1/2/- to £5/6/-; for Cork in 1968/69 the average was £2/6/- and ranged from 4/- to £7/6/-. In Dublin 36 per cent of persons entitled to the services resided in dispensary districts where the average cost per person for medicines was £2/10/- or less. The corresponding proportion for Cork County Borough was 48 per cent and for Cork County and County Borough was 59 per cent. At the other end of the scale about 13 per cent of the population covered in Dublin and Cork (County and Borough) were in dispensary districts where cost per person exceeded £4; in Cork City more than one fifth of the population covered were in this group. (See Table 10).

Persons on the General Medical Services Register and their dependants receive free medicine irrespective of whether they obtained the prescription from the District Medical Officer (dispensary doctor), a hospital out-patient clinic or a private practitioner. The percentage and number of prescription forms issued by the three types of doctors for a number of selected dispensary districts in the Dublin Health Authority area are outlined in Table 11. Dispensary districts are analysed into two groups; those where cost per person was £2/10/- or less (1A-7A) and those where cost per person was £4 or more (1B-7B). On an examination of the table, four facts emerge:—the high cost dispensaries have on average a higher cost per prescription form (12/10 as against 8/10); a higher consultation rate—prescription forms as a percentage of persons covered by the General Medical Services Register—(54 as against 38); a higher consultation rate by private practitioners (15 as against 10) and a smaller number of persons covered per dispensary district—2,300 as opposed to 6,500. It appears that District Medical Officers in general prescribe one item per prescription form while hospital doctors and private practitioners prescribe several items. This partly explains the higher cost per prescription form in the dispensaries where the District Medical Officer issues a relatively low proportion of the prescriptions.

An attempt was made to test whether there is any relationship

TABLE 10: *Persons on the General Medical Services Register in Dispensary Districts in Dublin and Cork analysed by Cost of Medicines per Head in Three Categories of Cost. Dublin 1967/68, Cork 1968/69.*

<i>Local Health Authority Area</i>	<i>Persons on the General Medical Services Register</i>							
	<i>Cost of Medicines £2/10/- or less per person</i>		<i>Cost of Medicines £2/10/-—£4 per person</i>		<i>Cost of Medicines £4 or more per person</i>		<i>Cost of Medicines Total</i>	
	<i>Number 000's</i>	<i>%</i>	<i>Number 000's</i>	<i>%</i>	<i>Number 000's</i>	<i>%</i>	<i>Number 000's</i>	<i>%</i>
Dublin	47	36	68	51	18	13	133*	100
Cork County Borough	12	48	8	31	5	22	24	100
Cork County and County Borough	56	59	26	27	13	14	94	100

*Excludes dispensaries with a total of 5,000 persons for which information is not available.

Note: Due to rounding off, figures may not add to stated totals.

Source: Information from Dublin and Cork Health Authorities 1969.

between the age of the dispensary doctor and the average cost of medicines for his patients. It was thought probable that the younger doctors would prescribe more sophisticated and expensive medicines. In Dublin only 20 doctors are in sole charge of a dispensary district and amongst these there appears to be some relation of this kind—for older doctors the cost of medicines per person is lower ($r=0.315$). (The co-efficient however is not statistically significant.) In Cork City and County, 70 out of 85 District Medical Officers are in single practice. For these too, there was an inverse correlation between cost of medicine per person and the age of the doctor, i.e. the younger the doctor the higher the cost. This may be due to the different prescribing habits of doctors of different ages but could also be due to a number of other factors, such as younger District Medical Officers being responsible for dispensary districts which differ in some relevant way from those in the charge of older doctors. For these 70 doctors the correlation was significant ($r=0.495$): as the doctor's age (x) increased, the cost of medicines (y) per person decreased at a rate of 16/- for every 10 years. (The regression equation with the t value in brackets is: $yc=6.634-0.083x$ (4.69)).

Attempts have been made in England and Wales to assess the relationship between the prescribing costs, ages and other characteristics of the doctors in practices. An investigation by the Ministry of Health (1964)⁶ found that for older doctors the prescribing costs were lower. This is similar to the result found in Cork. The investigation also found that there was a significant interaction between cost per prescription and list size. The average prescription frequency tended to decrease with increasing list size. For Dublin similar trends showed themselves in 1967/68. (See Table 11.) Prescription costs were lower in dispensary districts where the numbers entitled were comparatively high and the prescription frequency (i.e. consultation rate) tended to be lower in these dispensary districts.

A statistical analysis of the same data for Northern Ireland showed broadly similar trends to those noted in the British investigation.

⁶D2.

TABLE 11: Selected Dispensary Districts in Dublin Health Authority Area where Cost per Person for Medicines was £2/10/- or less (1A-7A) and £4 or more (1B-7B) 1967/68.

Dispensary District	Covered by the General Medical Services Register March 1968	Total expenditure on medicines 1967-68	Expenditure per person covered 1967-68	Number of prescription forms issued Dec. 1967-Nov. 1968	Cost per prescription form 1967-68	December 1967. Proportion of prescription forms made out by:										Total C.R.*
						D.M.O.			Hospital Doctor			Private Practitioner				
						Number	%	C.R.*	Number	%	C.R.*	Number	%	C.R.*		
	000's	[000's	£ s. d.	000's	s. d.	000's				000's			000's			
1A	3.8	4.3	1 2 5	18.8	4 7	0.9	60	24	0.2	14	6	0.4	26	11	41	
2A	6.5	12.1	1 17 0	23.2	8 7	1.1	52	17	0.3	16	5	0.7	32	11	33	
3A	8.2	17.4	2 2 7	45.1	7 10	1.8	64	23	0.4	14	5	0.6	22	8	35	
4A	7.0	15.3	2 4 0	33.2	9 2	2.1	69	30	0.2	7	3	0.7	24	10	43	
5A	6.5	15.3	2 7 5	36.2	8 5	1.5	76	23	0.2	8	2	0.3	16	5	30	
6A	2.2	5.5	2 10 0	12.3	8 10	0.9	81	41	0.1	5	3	0.2	14	7	51	
7A	11.5	28.9	2 10 5	52.7	11 0	2.7	56	23	0.5	11	4	1.6	33	14	41	
Total A	45.6	98.7	1 3 2	226.4	8 10	11.0	63	24	1.9	11	4	4.5	26	10	38	
1B	2.0	8.6	4 6 7	8.7	19 10	0.2	17	5	0.2	34	10	0.3	49	15	30	
2B	2.1	9.3	4 8 2	12.9	14 5	0.3	39	14	0.2	22	8	0.3	39	14	36	
3B	2.2	10.2	4 11 0	20.6	9 10	1.0	66	43	0.2	16	11	0.3	13	12	66	
4B	2.3	10.7	4 12 0	12.8	16 7	0.5	53	23	0.2	19	8	0.3	28	12	43	
5B	2.1	9.9	4 16 10	16.2	12 2	0.5	44	26	0.2	16	10	0.5	40	23	59	
6B	3.9	20.6	5 5 7	35.5	11 7	2.1	76	54	0.2	5	3	0.5	19	14	71	
7B	1.5	8.0	5 9 7	13.2	12 0	0.6	70	40	0.1	10	6	0.2	20	12	58	
Total B	16.0	77.1	4 16 2	119.0	12 10	5.1	60	32	1.2	14	7	2.3	26	15	54	

Note: *C.R. = Consultation Rate of Doctors: The number of prescriptions as a percentage of persons covered by the General Medical Services Register.

D.M.O. = District Medical Officer. (Due to rounding off, figures may not add to stated totals.)

Source: Information from the Dublin Health Authority, February 1968.

In local health authority areas outside the large towns medicines are usually dispensed by the District Medical Officer who receives no additional remuneration for this service. In dispensaries in the large towns medicines are dispensed by a qualified pharmacist. In 1968 the Dublin Health Authority employed 24 full-time and 17 part-time pharmacists in dispensaries.⁷ Between them they dispensed 876,000 prescriptions. This was equivalent to approximately 15 prescriptions per pharmacist's working hour in 1969. The Cork Health Authority employed one full-time and eight part-time pharmacists and two trained assistants. In one dispensary district three retail pharmacists provided in their own shops the services previously rendered by one full-time pharmacist. For the months April, May and June 1968, part-time pharmacists dispensed between 10 and 16 prescriptions per hour. The full-time pharmacist with two assistants dispensed 26 prescriptions per hour.

In Dublin in 1967/68 the average cost per prescription form was about 10/- and the average number of forms per person was 6.4. In addition to the pharmacists employed in the dispensaries the Dublin Central Pharmacy was staffed by one chief and four other full-time pharmacists. The expenditure on salaries of pharmacists was about £49,000, equivalent to about 12 per cent of the cost of medicines supplied.

Local health authorities purchase drugs from a variety of sources. The prices for the more important ones in value are negotiated under a central purchasing scheme. On average it is estimated that health authorities purchase drugs at a discount of 20 per cent off the wholesale price. In 1968/69 the cost of insurance, rents, rates, heat, light and loan charges for Dublin Health Authority dispensaries was £59,000, while the cost of cleaners, porters, receptionists and caretakers came to £45,000. These expenditure items are required for the District Medical Officers' surgeries, the pharmacies and the clinics held at the dispensaries. The Dublin Health Authority estimates that about half of this expenditure can be attributed to clinics. The remainder, say about £49,000 in 1967/68, is equivalent to approximately

⁷Many of these have retail shops of their own or are the wives or husbands of owners.

11 per cent of the ingredient cost of medicines. It, therefore, follows that the cost of dispensing a medicine, the wholesale price of which is 10/-, would be about 10/1 (8/- for ingredients plus 1/- for salaries and 1/1 for rent etc.) If the same medicine was bought at a retail pharmacy on the prescription of a private practitioner, the cost would be at least £1 (10/- plus 50 per cent on cost, plus a dispensing fee of 5/-). The low expenses in the dispensaries in respect of salaries and other costs are, of course, partly due to the conditions in which the service is rendered. The average waiting period for a prescription to be dispensed is rather longer than would be acceptable in a retail pharmacy. The pharmacist in a dispensary labels the medicine prescribed giving the name of the patient and the directions of the doctor. He does not, however, contrary to the retail pharmacist, keep a record of prescriptions dispensed.

Neither in the dispensaries where the pharmacist is employed nor in those where the doctor dispenses himself is there any system of stock control, nor any possibility of checking whether the medicines are stolen or misappropriated. In the nature of the subject matter knowledge of this is difficult to obtain. Where the doctor dispenses himself there may well be occasions when he issues medicine to patients who are not entitled to them, but who appear to him to be unable to pay for them. This possibly might be the case when the doctor feels particular respect for a patient who consults him privately and genuinely endeavours not to become a burden on welfare services.

The local health authorities at present keep no records of what medicines are prescribed and it is, therefore, not possible to discover what groups of drugs are responsible for the increased expenditure. The fact that any private general practitioner can prescribe any medicine for a person on the General Medical Services Register and his dependants makes it impossible to discover, much less control, over-prescribing by some doctors.

The expenditure of nearly £2m. without any proper system of records can only be explained by the fact that the system operating originally grew up at a time when the expenditure on medicines was only a fraction of what it is now, when drugs were much cheaper and when the number of people entitled to free medicine was much smaller.

TABLE 12: *Expenditure on Medicines by Voluntary Hospitals Receiving Grants from the Hospitals Commission, 1960-1967*

Year	Number of Hospitals							
	Total 58		Dublin C.B. 35		Cork C.B. 10		Rest of Ireland 13	
	£,000's	Index	£,000's	Index	£,000's	Index	£,000's	Index
		1960=100		1960=100		1960=100		1960=100
1960	259	100	213	100	21	100	25	100
1961	288	111	234	110	22	105	32	128
1962	307	119	256	120	22	105	29*	116
1963	343	132	288	135	22	105	33	132
1964	381	147	310	146	27	129	44	176
1965	430	166	359	169	35	167	36	144
1966	495	191	401	188	40	190	54	216
1967	564	217	422	198	48	228	94	376

*Two small hospitals are excluded after 1962.

Note: Almost all voluntary hospitals receive grants from the Hospitals Commission.

Source: Information from Hospitals Commission, 20th October, 1969.

Hospital Services

In addition to the £2m. spent on medicines for lower income group services in 1967/68, the expenditure on medicines in all local authority hospitals will have been some £500,000-£600,000. Approximately the same amount was spent on medicines by voluntary hospitals receiving grants from the Hospitals Commission. The majority of this expenditure was in Dublin and Cork hospitals. (See Table 12.)

Medicines are supplied free of charge to all hospital in-patients (except private patients) and to out-patients at Infectious Diseases clinics. Expenditure on medicines supplied to in-patients at Dublin Health Authority Hospitals (£184,000) increased by about two-thirds in the four years ending 1967/68. (See Table 13.) During the same period the cost of medicines for the lower income group more than trebled. The comparatively moderate increase in cost of medicines for out-patients at clinics is due to a decline in the prevalence of tuberculosis. In 1967/68 approximately two-thirds of all expenditure on medicine by the Dublin Health Authority was in respect of General Medical Services and one third on hospitals and clinics. In 1963/64 the expenditure on these two services had been about the same.

The trend of expenditure for the Cork Health Authority during this four year period follows much the same pattern. (See Table 14.) However, both in 1964 and 1968 the proportion of aggregate expenditure on hospital patients is rather larger than in Dublin. This difference may well be due to the larger number of voluntary hospital beds in Dublin. (In 1966 for Dublin the ratio of voluntary to health authority beds was 10:14, in Cork the ratio was 10:60).⁸

In Dublin, expenditure on medicines in voluntary hospitals was almost three times as great as in health authority hospitals, while in Cork the proportions were reversed. (See Table 15.) It is interesting to note that, though the composition of voluntary hospital beds in Dublin is quite different from that in health authority hospitals, the rates of increase in expenditure between 1964 and 1967 were virtually identical.

⁸The ratio was calculated on the average number of beds occupied daily in each hospital.

TABLE 13: *Total Expenditure on Medicines by the Dublin Health Authority 1963/64—1967/68.*

<i>Year ending 31st March</i>	<i>Homes and other than Psychiatric Hospitals</i>		<i>Psychiatric Hospitals</i>		<i>Infectious Diseases Clinics</i>		<i>General Medical Services</i>		<i>Total</i>	
	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>
1964	57	100	55	100	21	100	134	100	267	100
1965	62	109	68	124	23	110	160	119	312	117
1966	66	116	75	136	21	100	211	157	372	139
1967	75	132	81	147	23	110	299	223	476	178
1968	96	168	88	160	28	133	431	322	643	240

Source: Records of Issues of Medicines, Dublin Health Authority, 22nd September, 1969.

TABLE 14: *Total Expenditure on Medicines by the Cork Health Authority 1960/61—1967/68*

Year ending 31st March	<i>Homes and other than Psychiatric Hospitals</i>		<i>Psychiatric Hospitals¹</i>		<i>Infectious Diseases Clinics²</i>		<i>General Medical Services</i>		<i>Total</i>	
	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>	<i>£000's</i>	<i>Index</i>
1961	32	100	10	100	4	100	24	100	70	100
1962	65	203	17	170	5	125	37	156	124	177
1963	59	184	23	230	4	100	47	199	133	190
1964	58	181	33	330	4	100	58	244	153	218
1965	72	225	35	350	5	125	81	345	193	276
1966	78	244	46	460	6	150	102	433	232	331
1967	99	309	52	520	6	150	154	654	311	473
1968	92	288	54	540	8	200	205	873	359	513

34

Note: 1. Two new psychiatric units were established in 1967.

2. Tuberculosis and Infectious Diseases—medicines, drugs and appliances.

Source: Abstract of Accounts, Cork Health Authority, 1960/61—1967/68.

TABLE 15: *Expenditure on Medicines by Health Authority Institutions and Voluntary* Hospitals in Dublin and Cork*
1963/64—1967/68

Year ending 31st March	Dublin				Cork			
	Health Authority		Voluntary		Health Authority		Voluntary	
	£,000's	Index 1964=100	£,000's	Index 1964=100	£,000's	Index 1964=100	£,000's	Index 1964=100
1964	112	100	310	100	92	100	26	100
1965	129	115	359	116	108	117	35	135
1966	141	126	401	129	124	135	41	158
1967	156	139	422	136	151	164	48	185
1968	184	164	n.a.	n.a.	146	159	n.a.	n.a.

*Voluntary Hospitals receiving grants from the Hospitals Commission—35 in Dublin and 10 in Cork.
n.a.—Not available.

Source: Records of Issues of Medicines, Dublin Health Authority, 22nd September, 1969.

Abstract of Accounts, Cork Health Authority, 1963/64—1967/68.

Information from Hospitals Commission dated 20th October, 1969.

The average daily expenditure on medicines per patient in Dublin Health Authority psychiatric hospitals showed marked variation. In 1967/68 it was 4/- in St. Loman's, just over 2/- in St. Brendan's and only 10d. in St. Ita's. This appears to be due to differences in the proportion of long and short-term patients and the proportion of in-patients and out-patients. For non-psychiatric hospitals the variation was just as great—less than 2/- at St. Kevin's, even less at St. Mary's, but more than 2/6 at the James Connolly Memorial Hospital. The two extremes are Cherry Orchard and St. Columcille's with an expenditure of almost 3/6 and St. Patrick's Home with an expenditure of less than 6d. The cost of medicines for in-patients did not exceed six per cent of total expenditure in any health authority hospital and for St. Kevin's was as low as three per cent.

Medicines issued by the Central Pharmacy to all Dublin Health Authority dispensaries, hospitals and clinics are purchased under three schemes. About 30-40 per cent of proprietary and 15-20 per cent of non-proprietary medicines are bought under the Local Government Combined Purchasing Scheme at special contract prices. A mere two per cent of all medicines are purchased from wholesalers and the remainder from manufacturers or their agents at a discount of 10-15 per cent off wholesale price. Some manufacturers give a special hospital rate—usually a discount of 7½ per cent.⁹ Voluntary hospitals may purchase medicines under the combined purchasing scheme and do so to varying degrees. One voluntary hospital purchases between 50-60 per cent of its medicines in this way, another purchases a greater proportion outside the scheme. Voluntary hospitals also buy medicines from wholesalers (at either wholesale prices or at the special hospitals' rate) and from manufacturers (sometimes at a low discount, depending on the size of the order).

In 1969 the Dublin Health Authority employed in its hospitals six full-time and six part-time pharmacists. Thirty-four of the 58 voluntary hospitals receiving grants from the Hospitals Commission employed 19 full-time, 18 part-time pharmacists, as well as 12 assistant pharmacists. Only one full-time and eleven part-time pharmacists are employed in voluntary hospitals outside Dublin. Salaries for pharmacists working in health authority

⁹D₃.

and voluntary hospitals are similar—a maximum of £1,600 per annum for chief pharmacists and of £1,300 for assistant pharmacists, both excluding the recent increase of $7\frac{1}{4}$ per cent. Unlike his counterpart in a retail pharmacy, the hospital pharmacist spends all his time on dispensing and related duties such as ordering and checking of medicines, maintaining ward stocks and possibly discussing with doctors the properties and strength of new and established medicines.

All hospital pharmacies provide medicines for in-patients. These are generally taken from ward stocks which are maintained by the pharmacist and issued by the ward sister. The number of special prescriptions dispensed by the pharmacist to in-patients varies between hospitals—it ranges from four in one to over a hundred in another. In some hospitals, pharmacists dispense to in-patients on discharge one week's supply of medicine and for this a charge is made based on cost price. For private patients a service fee is also charged.

Some voluntary hospitals in Dublin provide a pharmacy service for out-patients. In 1967 in Dublin, 12 of the 28 voluntary hospitals had receipts in excess of £1,000 from the sale of medicines to out-patients.¹⁰ In some of the larger hospitals, e.g. the Meath and St. Vincent's where there are active out-patient departments, medicines are not dispensed. Out-patients have to present their prescriptions to a retail pharmacy or to their local dispensary. The maximum waiting period for prescriptions to be dispensed at hospital pharmacies for out-patients appears to be about one hour. However, persons on the Medical Register are excluded as they receive their medicines free from the local dispensaries. In cases of emergency one to two days supply of medicines are issued free to such persons. Other out-patients fall into two categories—those who are referred by general practitioners to the out-patient clinics and those who receive treatment in the casualty department. Both groups, irrespective of income, receive medicines at cost price, sometimes with a low service charge ($12\frac{1}{2}$ per cent in one hospital). The only other charge to these patients is $2/6$ for a stamp which must be purchased prior to treatment. Prescriptions for these two groups contain on average three items and a dosage for one to four weeks. The

¹⁰D₄ Table 8.

number of prescriptions dispensed to out-patients varies between hospitals—an average of 50–60 prescription forms per day in one, 25–30 in another. Pharmacists work a 36–39 hour week; pharmacies are open to out-patients for an average of 28 hours per week.

Private Purchase of Drugs and Medicines

Little information is available about private expenditure on prescriptions. It is possible, however, to attempt estimates on the basis of the Cashman Report¹¹ and the Central Statistics Office Household Budget Inquiry 1965/66.¹²

The Cashman Report gives the number of pharmacies as 1,282, their average turnover in 1965 as £6,923, thus arriving at a turnover of all pharmacies of approximately £9m. On the basis of the survey undertaken by the Pharmaceutical Society¹³ the Report estimates that approximately 20 per cent of the retail pharmacist's receipts are derived from compounding and dispensing prescriptions, thus giving a total expenditure on prescriptions of £1.8m. The Cashman Report estimates must be viewed with some reservations (as already mentioned), as in the following year the Census of Retail Distribution found the average turnover of retail chemists who participated in the Census (approximately 83 per cent of all establishments) to be £9,400 and the total turnover, allowing for non-participating chemists, approximately £11m. On these figures, accepting the Cashman proportion of one fifth of total turnover being derived from prescriptions, expenditure on prescriptions would be approximately £2.2m.

The Household Budget Inquiry 1965/66 gives expenditure on medicines and drugs (item number 279) as 2/4 per week in urban households, equivalent to say £6 per annum. This item covers both the cost of medicines obtained on doctors' prescriptions and the purchase of proprietary medicines and household remedies. The number of urban private households in 1966 was 391,000 so that expenditure on all drugs and medicines in urban areas was £2.3m. No data whatsoever are available on expendi-

¹¹C2.

¹²D5.

¹³C2, page 8.

ture in rural areas,¹⁴ but this is certainly less than in urban areas for a number of reasons: the proportion of the population covered by the General Medical Services Register is higher, the standard of living is generally lower and access to doctors' surgeries and retail pharmacies is less easy. If it is assumed quite arbitrarily that expenditure on drugs and medicines in rural areas is two-thirds of what it is in urban areas, this would give an expenditure of £4 per household. The number of non-urban households is 297,000 so that total expenditure would be £1.2m. This gives an aggregate expenditure on drugs and medicines in the State of £3.5m.

The Cashman Report estimates that 20 per cent of pharmacists' turnover is from prescriptions and 27 per cent from other medicines. This gives a proportion of 42 per cent of all expenditure on human medicines being in respect of prescriptions. This, however, is certainly too high as it does not take into account purchases of drugs and medicines from chain-stores and other retail outlets. An assumption that two-fifths of expenditure on human medicines is on prescriptions, based on the Cashman Report estimates, is thus conservative and if it errs it does so on the high side. Applying this proportion to the estimated expenditure on drugs and medicines of £3.5m. gives an expenditure on prescriptions of £1.4m.

The above assumptions, estimates and calculations make it appear probable that private expenditure on prescriptions is of the magnitude of £1.4m. to £2.2m. The total population not eligible for free medicines under the General Medical Services is about 1.9 million so that expenditure on prescriptions per head per year will be about 15/- to 23/-. This is an astonishingly low figure.

The cost of medicines in 1967 for the 880,000 people on the General Medical Services Register was £1.7m. The proportionate cost for the 1.9m. not eligible for free medicine would be £3.7m. This figure is based on three assumptions: (1) that the number of prescriptions per head is the same; (2) that the average ingredient cost is the same and (3) that the price at which medicines are bought privately is the same as the cost at which

¹⁴D6. In the U.S.A. in 1962 average expenditure per head was \$27 in urban areas and \$19 in rural farm areas.

they are acquired by local health authorities. The third assumption is certainly unrealistic. Local health authorities purchase medicines at about 20 per cent below wholesale price while individuals buying in retail pharmacies pay the wholesale price plus 50 per cent on cost, plus a dispensing fee which was $\frac{3}{6}$ at that time. The price paid by the private customer is at least twice as high as that paid by the local health authority. The second assumption of average ingredient cost being the same is also rather dubious. The proportion of proprietary, rather than generic, medicines prescribed by private practitioners is likely to be higher than that of dispensary doctors. For this reason prices paid by private patients would on average be higher. The first assumption about equality in number of prescriptions per head will err in the opposite direction. It is likely that prescriptions for private patients are less per head than for those eligible for free services. This will be the case because the population eligible for free services includes children, the old, the disabled and the least well off who require most medical care, and because the cost of visiting a private practitioner is a deterrent to seeking medical advice.

While it is impossible to be certain of the quantitative effect of these various factors, it does not appear unreasonable to suggest that the divergences from assumption (1) and (2) cancel each other out and that the approximate expenditure by private patients in 1967, on the same basis as those eligible, would have been £7.4m., that is paying twice as much for the same ingredients and number of prescriptions as the local health authorities pay.

Pharmaceutical services in Northern Ireland are discussed at some length in the Appendix, but it is of interest at this stage to estimate expenditure on private prescriptions in the Republic if the number of prescriptions per head and the ingredient cost were the same as in Northern Ireland. Total cost of prescriptions for Northern Ireland in 1965/66 was £5.6m., about £3/15/- per head of the population. The number of people purchasing medicine privately in the Republic is 1.9 million so that the corresponding expenditure would be £7.1m. However, the retailers' margin, including professional fees, in Northern Ireland is only 41 per cent on the wholesale price while in the Republic

it was at that time 90 per cent—assuming an average ingredient cost of 8/6 per prescription, an on-cost of 4/3 and a dispensing fee of 3/6. The price of medicine to the private purchaser in the Republic was approximately 35 per cent higher than it was to the National Health Service in Northern Ireland. If prescriptions per head, average ingredient cost and dosage had been the same for the private sector in the Irish Republic as for the National Health Service in Northern Ireland, private expenditure on prescriptions would have been about £9.7m.

In 1966 in the United Kingdom expenditure on medicines prescribed by medical practitioners under the National Health Service was £188m. In addition, the public spent £79m. mainly on medicines bought without a doctor's prescription.¹⁵ Thus about 30 per cent of all expenditure on medicines, approximately 1/9 per week per household, was on self-medication. This seems surprising where medicines were dispensed without charge to the whole population under the National Health Service.

In Ireland where more than two-thirds of the population have to pay for all general practitioner services it seems more than probable that the average number of visits to doctors' surgeries are fewer than under the free National Health Services in Northern Ireland and Great Britain. The high cost of the medicine prescribed presumably deters people further from consulting a doctor. Both these factors are encouragements for self-treatment. All the same, expenditure on medicines and drugs according to the Household Budget Inquiry is only 2/4 per week per urban household. If it is accepted that approximately 40 per cent of this is spent on prescriptions, the expenditure on proprietary medicines and household remedies is only some 1/4 per week, even less than in the United Kingdom. The Cashman Report gives expenditure in 1965 on medicines for self-treatment bought at retail pharmacies as £2.4m. (25 per cent of £9m.), about 1/4 per week per household. This sum has to be increased in respect of the purchase of such medicines at chain-stores and other retail outlets. No estimates of such expenditure are available but it is unlikely to be more than, say, 4d. per week.

Fairly extensive data about expenditure on medicine are available for the United States. These are based on mail-in

¹⁵D7, page 3.

questionnaires left with household health interview respondents during the last six months of 1962. These covered 22,000 households containing 71,000 persons. The figures show three characteristics of expenditure on medicine which are of interest: first, expenditure is higher for females than for males (\$29 as against \$22 per year). Second, expenditure on medicines increases fairly steeply with age. It was \$54 per year for the over 65's, about half this amount for the 25-44 age group and one quarter for the 6-16 age group.¹⁶ Third, the age-adjusted expenditure per person per year varies astonishingly little with income. For household incomes of under \$2,000 it was \$22, and for those over \$10,000 it was \$31. This increase of just over 40 per cent compares with a corresponding increase in medical expenses of more than 90 per cent and of dental expenses of 200 per cent.¹⁷ In America, the income elasticity for medicines seems to be well below unity.

For Ireland, some information on expenditure on medicines by income, but not by age or sex, can be gleaned from the Household Budget Inquiry 1965/66. This shows that expenditure per household (4.13s. per week) for the professional and managerial social group is about 260 per cent higher than for unskilled and semi-skilled workers (1.14s.).¹⁸ Expenditure by income group seems to have an income elasticity of unity up to household income of £20 per week. For higher incomes the elasticity is below unity.¹⁹

V. PHARMACEUTICAL SERVICES IN OTHER COUNTRIES

A detailed description of pharmaceutical services in three other countries is given as an Appendix. The institutions, regulations and practices operating abroad are examined to find out whether any lessons can be learned from them. The three countries whose services are described are Northern Ireland, on account of its proximity, Denmark, a small country which has

¹⁶D.6. Table 1.

¹⁷D.6. Table 3.

¹⁸D.5. Table 5A.

¹⁹D.5. Table 7A.

well-developed social services and some exceptionally interesting features in the field of pharmacy, and Canada, a richer country which relies on services being provided almost entirely outside the social welfare field.

Unfortunately, the information available on the various facets of the service—retail pharmacies, hospitals and the profession of pharmaceutical chemist—is not the same for all countries. In any case, inter-country and even inter-regional comparisons must be treated with great care. The cost of medicines by no means depends entirely on the structure, organization and efficiency of pharmaceutical services but is largely dependent on three other factors: the prices charged by drug manufacturers, the prescribing habits of the medical profession and differences in the prevalence of specific diseases. In comparing changes over time these three factors are as liable to alter as the pharmaceutical services themselves.

The general rule appears to be that pharmacists can only practise in the national territory in which they are registered, though some non-European countries allow pharmacists registered abroad to practise within their territory. In Ireland and Denmark, registered pharmacists are restricted to practising within their countries. In Canada, in most cases, pharmacists may only practise in the Province in which they are registered. In Northern Ireland, though it has its own legislation in respect of drug control and pharmaceutical services, pharmacists registered there are recognized in all parts of the United Kingdom.

In the Republic, retail pharmacists are free to charge for medicines any price they wish. The Irish Drug Association, to which virtually all retail pharmacists belong, recommends a certain method of pricing but this is optional. In Northern Ireland, the same is true for the very small, almost negligible, proportion of drugs dispensed privately. For National Health Service prescriptions the rates of payment to chemist contractors are by long-standing arrangement virtually identical to those in Scotland. These rates are the basis of the contract between pharmaceutical chemists and the General Health Services Board.

In Denmark, all medicines produced in pharmacies are sold at prices laid down in an official tariff. The system is quite easy to enforce as virtually all drugs bought by the public give rise to a

claim for reimbursement to the Insurance Funds and thus prices can be checked. In Canada, the position is similar to that in Ireland. However, in Ontario, as from the beginning of 1970, the drug pricing programme (a scheme which is not compulsory for retail pharmacists) will bring about a uniform method of charging by those who participate in the scheme.

The structure, organisation and efficiency of pharmaceutical services in a country are partly determined by who pays for the drugs. In the Republic and in Canada, individuals pay the full price for all drugs bought at retail pharmacies. At present one third of the population in the Republic are entitled to free medicines which are issued either by District Medical Officers or at local authority dispensaries. Under the Health Act, as from April 1971, these will be dispensed by retail pharmacists. In Northern Ireland, half the population under the National Health Service receive all medicines free of charge and the other half pay 2/6 per prescription. In Denmark, for virtually all drugs bought on a doctor's prescription, there is a claim for reimbursement of 75 per cent of the price against the National Insurance Funds.

In the Republic and Northern Ireland, as well as in Canada, there is no restriction of any kind on a registered pharmacist opening a retail shop. In Northern Ireland, however, the Pemberton Report recommends that consideration should be given to the desirability of a statutory limitation on the unrestricted right of entry of registered pharmaceutical chemists to the General Health Services Board's list. For the Republic, the Cashman Report, representing the views of members of the Council of the Pharmaceutical Society of Ireland, recommends "the planning of a rational geographical spread of pharmacies". Restriction of entry in the Republic without price control by a public authority would of course have quite different implications than a similar policy in Northern Ireland.

In Denmark, a Royal licence is required to open a retail pharmacy and pharmacies are subject to much more detailed control in respect of premises and procedures than is the case in the other countries under review. A system of rational geographical planning is supplemented by a scheme in which pharmacists in prosperous urban areas subsidise those in rural sparsely populated ones.

A limited comparison of statistics relating to these three countries and Ireland is attempted in the following pages, but these should be viewed with caution.

The population per retail pharmacy in the Irish Republic is about 2,300; this is only slightly higher than the ratio in Northern Ireland. In Canada, the ratio is twice as great at about 4,200; in Denmark, however, it is as high as 14,000.

In the Republic and Northern Ireland, in spite of almost identical population per retail pharmacy, the average turnover differs significantly. In Northern Ireland in 1965, the average sales "per chemist and photographic wares shop" were £13,700¹ while average sales of chemists in the Republic in 1966 were only £9,000. In the Republic almost 24 per cent, but in Northern Ireland only seven per cent, had a turnover of less than £5,000 per annum (see Table 16). Retail pharmacies in Northern Ireland whose turnover was on average, allowing for the time adjustment, two-thirds higher than in the Republic, were described by the Pemberton Committee Report to contain a proliferation of small pharmacies. All the chemists' organisations who gave evidence were in agreement that the number of pharmacies in Northern Ireland is greatly in excess of that necessary to provide an adequate pharmaceutical service. (Para. 147.)

In Danish pharmacies only medicines are sold. In Northern Ireland the vast majority of sales in retail pharmacies are medicines, but an appreciable amount of photographic wares and cosmetics are also sold. In Ireland, just under half of all sales are of human, and another quarter of veterinary, medicines. In Canada, the sale of medicines as a contribution to total turnover is less important than in the other three countries.

The Practice of Pharmacy Committee of the Pharmaceutical

¹The Northern Ireland Retail Sales Index for Pharmacy and Photographic Goods increased between 1965 and 1966 by six per cent. (Northern Ireland *Digest of Statistics* No. 29, Table 146.) In the same period the gross cost of prescriptions increased by 13 per cent. (Table 40.) On the basis that approximately half the income of chemist contractors is derived from payments by the General Health Services Board for dispensing prescriptions, it is estimated that average turnover increased by 9½ per cent, i.e. an average turnover of £15,000 for 1966.

TABLE 16: *Number of Establishments and Turnover of Retail Pharmacies in the Republic (1966) and Northern Ireland (1965)*

<i>Turnover per Establishment £</i>	<i>Establishments</i>				<i>Turnover</i>			
	<i>Republic</i>		<i>Northern Ireland</i>		<i>Republic</i>		<i>Northern Ireland</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>£,000's</i>	<i>%</i>	<i>£,000's</i>	<i>%</i>
Under 1,000	9	1	8	1	5	—	5	—
1,000—5,000	234	23	40	6	798	8	121	1
5,000—10,000	458	45	170	24	3,393	35	1,323	14
10,000 and over	324	32	495	70	5,444	57	8,381	85
	1,025	100	713	100	9,640	100	9,830	100
Average per Establishment £'s					9,400		13,700	

N.B.—The number of establishments found in the Census in Northern Ireland is virtually the same as the number of shops of chemist contractors to the General Health Services Board, while in the Republic it is estimated that the number of shops covered in the Census equals only 83 per cent of the total. Allowing for this non-participation, it is estimated that the actual average turnover is only £9,000 per shop and not £9,400 as shown in the table.

Source: Census of Distribution 1966 and the Report on the Census of Distribution and Other Services of Northern Ireland 1965.

Society estimated that in 1965 in Ireland receipts from prescriptions were about one fifth of the turnover of retail pharmacies.² In Northern Ireland, about half of the pharmacist's income is derived from prescriptions; in Denmark, the proportion is even higher and was about 58 per cent in the early 1960's. In Canada, receipts from prescriptions were less than a quarter.

No information is available in Ireland about the number of prescriptions per head of the population nor the cost per prescription. In the other three countries the cost per prescription has increased appreciably between 1958 and 1967—in Northern Ireland by 62 per cent, in Denmark by 124 per cent and in Canada by 28 per cent. In these three countries there was also a marked increase in the number of prescriptions per head of the population—in Northern Ireland 41 per cent, in Denmark 22 per cent and in Canada 33 per cent. (See Table 17.)

An examination of the reasons for these varying rates of increase is outside the scope of this paper. It should, however, be noted that the increase in both cost and number of prescriptions occurred in all three countries, irrespective of the differences in the structure and organisation of medical and pharmaceutical services. The free enterprise system in Canada shows the lowest rate of increase in costs. This is, however, offset by the cost per prescription being almost twice as high in 1967 as it was in Northern Ireland and Denmark. The number of prescriptions per head of population is much lower in Canada than in the other two countries—well under half that of Northern Ireland and less than three-fifths that of Denmark.

In 1967, the cost of prescriptions per head was very similar in the three countries—somewhere about £4. The increase during the previous ten years had been largest in Denmark—almost threefold. Even so, Denmark remained marginally the country with the lowest cost. In Northern Ireland, costs have not increased quite as fast, but all the same were in 1967 about 10 per cent higher than in the other two countries. In relation to the purchasing power of money and average incomes in the three countries, costs were even higher than when expressed in sterling converted at the official rates of exchange.

²C2.

TABLE 17: *Number and Cost of Prescriptions, 1958-1967*

	<i>Annual Average Prescriptions per head of Population</i>			<i>Cost per Prescription</i>			<i>Cost of Prescription per head</i>		
	<i>Northern Ireland</i>	<i>Denmark</i>	<i>Canada</i>	<i>Northern Ireland</i>	<i>Denmark</i>	<i>Canada</i>	<i>Northern Ireland</i>	<i>Denmark</i>	<i>Canada</i>
				<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1958	4·9	4·6	2·4	7 5	6 0	18 8	36 6	27 7	44 9
1959	5·2	4·8	2·5	7 11	6 5	20 0	41 3	31 8	50 0
1960	5·1	4·8	2·4	8 5	6 6	20 6	43 1	31 3	49 3
1961	5·0	4·8	2·3	9 4	7 2	21 1	46 7	35 2	48 6
1962	4·7	4·8	2·4	10 4	8 1	21 3	48 6	39 3	50 9
1963	4·8	4·9	2·6	11 0	8 8	21 6	52 9	42 7	55 9
1964	5·0	5·3	2·7	11 8	9 6	22 3	58 6	50 4	60 0
1965	6·1	5·3	3·1	11 9	10 7	22 4	71 7	56 2	69 2
1966	6·9	5·5	3·1	11 9	12 0	23 3	81 1	66 0	72 1
1967	6·9	5·6	3·2	12 1	13 5	24 0	83 4	75 7	76 9

Note: Canadian Dollars and Danish Kroner are converted into sterling at current rates of exchange, i.e. at rates prior to devaluation in 1967.

The cost per head for prescriptions in Ireland was much lower than in the other three countries. For that third of the population entitled to free services it was about £1/19/- and for those paying for themselves only about £1 per head. These two groups buy medicines at widely divergent prices. The expenditure of those paying for themselves would have been only 10/- per head if prices had been similar to those paid by health authorities.

In the Republic and Northern Ireland, the typical retail pharmacy is staffed by one qualified pharmacist. In Canada, the average number is in excess of two and in Denmark it is almost three. The number of pharmaceutical chemists in retail pharmacies per head of the population is just under 2,000 in Ireland, Northern Ireland and Canada, but more than twice as high in Denmark.

In all four countries the dispensing of medical prescriptions must be undertaken or supervised by registered pharmaceutical chemists. The professional associations actively strive to establish pharmacy as a profession rather than a trade. This had led in all four to a successful pressure for making pharmacy an all-graduate profession. The length of the university course in the Republic, Northern Ireland and Denmark is three years and in Canada four years. The length of the course, however, must not be taken as a measure of the level of academic attainment achieved as, *inter alia*, university entrance qualifications differ between countries. In Northern Ireland and Denmark pupils in the last year of secondary school take subjects at a standard broadly similar to that of first year undergraduates in Canada and the Republic of Ireland. On this basis the university course in the Republic is one year shorter than it is in the other three countries.

In all countries in addition to a degree, practical experience is required prior to registration. In the Republic and Northern Ireland this is twelve months. In Denmark, a two-year apprenticeship followed by a qualifying examination between university matriculation examination (science stream) and entry to the university is prescribed, while in Canada a student must acquire practical experience for 12 months which has to be taken in three separate sessions; one three-month period after the completion of the second year, another prior to graduation and a six-month period after graduation.

VI. PHARMACEUTICAL SERVICES—SOME ISSUES

In considering the present state of pharmaceutical services in Ireland, four issues arise which require further discussion: (1) the education of pharmacists, (2) income from prescriptions, (3) the high margin on non-ethical proprietary drugs and (4) self-treatment.

Education

The education pharmacists receive is relevant to a paper concerned with pharmaceutical services for three reasons. First, an unduly high standard of education reduces the number of entrants to the profession and thereby tends to increase levels of remuneration. Second, a high educational standard is itself used as an argument for higher remuneration. Third, the expenditure of public funds to finance pharmaceutical education to a level higher than necessary would be wasteful. The Commission on Higher Education 1960-1967 in its Report considered it beyond the scope of the inquiry to determine what should be the requirements for entry to the pharmaceutical—or to any other—profession, but noted:—

“It might, perhaps, be questioned whether a university course and degree, even if justifiable in relation to the needs of the industrial and hospital branches of pharmacy, is not an excessive requirement for retail pharmacy as practised in Ireland.” (10.122)¹

The Dean of the College of Pharmacy, Professor R. F. Timoney, in oral evidence to the Commission in 1964 gave the reasons why the Pharmaceutical Society desired to make a university degree a condition for registration as a pharmacist. These are summarised in the Report:—

“(a) Irish pharmacists should have the same general basic standards in their training as pharmacists in other countries.

¹E1.

- (b) They should have the training which would enable them to practise in the several branches of the profession.
- (c) There was a need and a demand for university-trained pharmacists in the pharmaceutical industry and in hospital pharmacy.
- (d) While, for economic reasons, the Irish retail pharmacist found it necessary to engage in the sale of non-pharmaceutical products it was still necessary for him to: 'know quite a lot about modern drugs, about their stabilities and about the ways in which they are formulated; he must be able to talk intelligently to a physician or to anybody else who requests information. This requires a degree of training which it has not been possible to provide prior to the introduction of the degree course' (10.121)²

The first point made by Professor Timoney carries at present possibly even more weight than it did at the time on account of Ireland's application to join the European Economic Community. The Treaty of Rome provides for the eventual "mutual recognition of diplomas, certificates and other evidence of qualifications" (Article 57) and refers particularly to the progressive removal of restrictions on recognition of medical, paramedical and pharmaceutical qualifications. The basic requirement for recognition as a pharmacist will be a university degree, presumably extending over a minimum period of 4-5 years.

Pharmacists, and this is the second point made by Professor Timoney, consider themselves as one profession irrespective of the branch in which they practise—retail pharmacy, hospital pharmacy or quality control in the pharmaceutical industry. To the layman this may well appear a false standardisation but the problem is by no means unique to pharmacists.

Professor Timoney is quite emphatic in his fourth point that the retail pharmacist requires a university degree, not merely because this is the case in other countries or to maintain the unity of the profession, but as an essential requirement for the proper performance of his duties.

These arguments are quite cogent from the point of view of both members of the profession and of an academic teacher

²E1.

striving for high standards. They are, however, not quite as persuasive from the viewpoint of the purchasers of medicine and other users of pharmaceutical services.

One of the several disadvantages of joining the European Economic Community is that it will force on Ireland standards and procedures which are practised and considered suitable for countries which have a Gross National Product per head of population which is almost twice as great (or at the very least half as great again) as that of this country. In itself, this might present a considerable disadvantage. Present conditions in Ireland in many respects—density of population, prescribing habits, frequency of prescriptions, educational system, hospital services, standard of living—are so different, that the adoption of norms suitable to other Western European countries may well be considered of doubtful benefit.

Pharmacists receive a university education which enables them to compound prescriptions and gives them the scientific knowledge to understand the properties of the material used and their pharmacological effects. However, nowadays the compounding of medicine is rare and is becoming increasingly rarer. On account of changes in the structure of the pharmaceutical industry, the overwhelming majority of drugs and medicines are factory produced and the pharmacist normally either transfers the tablets from a large to a small container or re-labels a container which is passed to the purchaser. It may, therefore, be legitimately doubted whether the advanced education retail pharmacists receive in applied sciences is necessary for the work they perform. A pharmacist must have sufficient knowledge to be able to warn patients, and possibly even doctors, about toxic and undesired effects of drugs, but it is questionable whether this knowledge must be based, or appear to be based, on a deep understanding of the nature of drugs. The five major tasks of a retail pharmacist are: (1) to identify the substance ordered, (2) to ensure that directions conform to limits of recommended dosage, (3) to make a permanent record of the prescription, (4) to ensure the absence of therapeutic and/or chemical incompatibility, (5) to label the medicine with appropriate directions and accept complete responsibility for the issue of the final product. This requires above all conscientiousness, knowledge of the legal provisions

relating to the sale of drugs and familiarity with a small number of standard reference works.

In addition the retail pharmacist requires some basic scientific knowledge. This should be sufficient to give him an understanding of the principles of pharmaceutical science so as to enable him to contend with the changes and advances that will occur during the whole of his professional life. The point at issue is the extent of the knowledge required.

The views put forward by Professor Timoney would be shared by most university teachers in Western Europe. They are identical to those expressed in 1966 in an unpublished Report on "The Development of Pharmaceutical Education in Ireland" by Professor Frank Hartley, Dean of the School of Pharmacy, University of London, and Professor Arnold Beckett, Head of the Pharmacy Department of the Chelsea College of Science and Technology, London. They conclude that the present standard of the degree examination must be maintained and, if possible, enhanced.

The arguments an economist might put forward for more economical ways of training retail pharmacists may be strong and convincing. However, a lowering of present standards is not a practical proposition. In three respects the present training of pharmacists has desirable features. First, the degree course is shorter than in other countries in the sense that while it lasts three years as in Britain, it is three years from the Leaving Certificate which is one academic year lower than the British matriculation qualification.³ Second, it is possible to take an honours science degree in Pharmacology, which is comparable in standard to the corresponding British degree, by continuing at University for one further academic session.⁴ This system has the advantage that most students qualify one year earlier than they do in Northern Ireland and Great Britain but at the same time it enables a limited number of good students to qualify for

³This is effectively equivalent to a two-year university course on British standards and is one of the reasons why membership of the Pharmaceutical Society of Ireland is not recognised as a qualification for registration in Britain.

⁴It is also possible for graduates to take research degrees in pharmaceuticals and pharmacognosy.

the higher degree. Third, the provision of the 1890 Act legally recognising assistants to pharmaceutical chemists as competent to transact the business of a pharmaceutical chemist in his temporary absence, provides for a technician grade which greatly facilitates the provision of pharmaceutical services. In the future planning of pharmaceutical services it is important to maintain this grade and to make adequate provision for the education of these technicians.

At present about 90 pharmacists are working full-time and part-time in hospitals; few dispensing assistants are employed. Given the 1969 hospital structure this number may well be inadequate. However, in the years to come there will be fewer and larger hospitals and in these pharmacists will be able to give a better service than is provided now. In a small hospital, particularly one not catering for out-patients, there is little scope for division of labour, but as in other professions, the pharmacist can be assisted by auxiliaries working under supervision. The Grosset Committee reporting on the Hospital Pharmaceutical Service in Scotland comments:

“We regard it as essential that effective arrangements should be made to recruit, train and use auxiliary staff to the maximum in support of the pharmacist. . . . The effective limit to the number of this grade who can be employed depends upon the number of dispensing assistants who can be supervised by a pharmacist. . . . At present, the evidence which we have shows that the average ratio of pharmacists to dispensing assistants is about one to one. We consider that the ratio could be increased to allow one pharmacist to supervise two assistants and still permit adequate supervision to be given. We exclude chief pharmacists for this purpose since, in the larger pharmacies at least, the chief pharmacist should be carrying out duties other than the supervision of assistants.” (Paras. 109 and 113.)⁵

The Grosset Report attaches great importance to the pharmacists in the hospital structure and outlines what their function ought to be in the Scottish hospital system. Many of the recom-

⁵E2.

mendations of the Report may in future be considered relevant to Irish conditions. One of the most important of these, which will be applicable to Ireland in the near future, is to provide proper training facilities for dispensing assistants in the hospital service. The present six-month course for pharmaceutical assistants at the College of Pharmacy might be suitable for this purpose.

The education of pharmacists has, mainly for historical reasons, another distinct feature. A considerable proportion of the cost of tuition at the College of Pharmacy is still borne by the Pharmaceutical Society and thereby indirectly by its members. While it is illogical and unreasonable to finance the education of pharmacists differently from that of doctors, dentists and opticians, there is an argument for all professions contributing to the cost of educating their successors. This would be a device by which the burden on the State for financing university education would be reduced and the cost would be borne by the consumers of the service through higher fees. The patient consulting a doctor or a dentist would thus pay a fee which would cover the total cost of the service including the capital cost of education. At present this is partly borne by the State. The strength of this argument is, of course, greatest where the whole cost of the service is paid for by the consumer, and least where a large proportion of the cost is borne by the State. From this point of view a levy on veterinary surgeons for university courses would be much more justifiable than a levy on teachers for college of education courses, with pharmacists coming somewhere in between.

Income from Prescriptions

The normal procedure for retail pharmacists pricing prescriptions is to take the wholesale price or ingredient cost plus an on-cost of 50 per cent plus a dispensing fee of 5/- per prescription. It is possible for a person to purchase some medicine in the same shop at three different prices. This can be illustrated by two examples referring to ethical preparations (medicines advertised to the medical profession only). (1) Codis, an analgesic. A prescription for 20 tablets in early 1969 would be bought by the

retailer at 2/-. To this he would add an on-cost of 50 per cent plus a prescription fee of 5/-, giving a total of 8/-. A customer could walk into the shop and buy a packet of codis at the standard retail price of 3/-. The third possibility is for the customer to ask for codeine compound tablets, a non-branded standard preparation having the same therapeutic efficacy, and pay something like 1/6. (2) Petrolagar (No. 1), a laxative, at a wholesale price of 4/4 for 16 fluid oz., the cost on prescription is 11/6; purchased without a prescription it is 6/6 and the non-branded equivalent, compound emulsion of liquid paraffin B.P.C., is about 4/3. In dispensing a prescription for tablets the pharmacist normally removes the tablets from the original packet and hands them to the customer in a plain box with a label giving the patient's name and the doctor's instructions as to dosage. Similarly in dispensing a pre-packed medicine he removes the manufacturer's label and replaces it by one giving the doctor's instructions and the patient's name.

The Irish Drug Association in their evidence to the Fair Trade Commission in 1956 defending the practice of charging a dispensing fee on proprietary drugs which can be bought without a prescription stated:—

“that a doctor might not want a patient to know what the particular medicine was, particularly if it was a poison, and that the chemist was, in any case, responsible for correctly interpreting the doctor's instructions as to dosage.” (Para. 54.)

The pharmacist's dispensing fee has increased steeply during the last 20 years. It was 6d. in the late 1940's, 1/6 in the middle 1950's, 3/6 in the 1960's, and has been 5/- since early 1969—a tenfold increase in twenty years, a period during which the Consumer Price Index just about doubled. This increase can only to a very limited extent be explained by a reduction in the proportion of the population catered for by retail pharmacies. During the last 13 years the proportion on the General Medical Services Register increased only from 23 to 31 per cent. The dispensing fee of 5/- is charged in all the large towns and urban areas but is not quite so universal in rural areas where it is sometimes a lesser amount and sometimes no fee at all is charged.

In recent years the price of prescriptions has also increased

steeply though this trend cannot be substantiated in relation to private prescriptions in Ireland. In Northern Ireland, the average payment per prescription to a chemist contractor increased from 6/3 in 1956, to 10/- in 1962 and to 13/9 in early 1969, i.e. an increase of 120 per cent over 1956, and 38 per cent over 1962. Information about cost per prescription for persons on the General Medical Services Register is not available for past years. The cost per person covered by the Register in the Dublin Health Authority area between 1961/62 and 1967/68 increased by about two and a half times and in the Cork Health Authority area about fourfold. (See Tables 9A and 9B.) This cost is influenced by several factors of which changes in prescribing habits of doctors and the price of medicines are only two. There can be, however, no doubt that the cost of prescriptions at wholesale prices increased very steeply since 1956 and also rose quite substantially since 1962. The Consumer Price Index between 1956 and 1969 increased by about 56 per cent and between 1962 and 1969 by about one third. Receipts from the on-cost on prescriptions must, therefore, have increased more steeply than the general price level.

Little information is available about expenses incurred by retail pharmacists. Average wages and salaries per shop (not average earnings per employee) are contained in the Censuses of Distribution (see Table 4). They show an increase of 56 per cent between 1956 and 1966. The Census also gives a rate of stock turnover for all goods sold in chemist shops. This improved from 2.8 to 3.3 between 1956 and 1966.

Another factor which may have increased receipts from prescriptions is an increase in the number dispensed. This is likely to have been quite substantial. Between 1958 and 1969 G.N.P. at constant money prices increased by about one half. The consequent increase in standards of living will have been reflected by an increased consultation rate of general practitioners, particularly amongst the urban working class. Increased consultation rates are more or less equivalent to increased prescriptions. The Fair Trade Commission, referring to 1955/56, estimates receipts from dispensing to be approximately 10 per cent of sales, about £500 per shop. (See Table 4.) The Cashman Report estimated the proportion of income from prescriptions in 1965

to be approximately 20 per cent, which on the basis of the 1966 Census figures would be some £1,800 per shop. The proportion of income from dispensing is estimated by people very familiar with the profession. While all these figures must be treated with caution, the fact that receipts from prescriptions in the 1960's have increased very much more rapidly than the general price level must be considered as beyond dispute.

At present, the margin earned on prescriptions by chemist contractors in Northern Ireland is about 41 per cent and in Canada, about 65 per cent. For private prescriptions in Ireland the pharmacist's margin is 100 per cent on the assumption that the wholesale price of ingredients and the dosage is approximately the same as that in Northern Ireland, i.e. 9/- per prescription.⁶ On account of the flat rate prescription fee of 5/-, the margin is higher the lower the ingredient cost. Thus, in the codis example quoted above, more extreme than typical, the margin is 300 per cent.

The Pharmaceutical Society of Ireland in their submission to the Fair Trade Commission in reference to dispensing claimed that:

"It is submitted that this skilled service (dispensing), necessitating the keeping in stock of innumerable ethical preparations, could not be made available all over the land unless the chemists' professional activities were subsidised by retail sales of proprietary and patent medicines, infant foods, medical and toilet preparations."⁷

The morality of subsidising dispensing, as a matter of policy, by overcharging for other goods and services is, at least, questionable. It is difficult to justify logically or morally why persons requiring prescriptions should be subsidised by parents who buy infant foods for their children.

Retail pharmacists justify high margins on dispensing by two

⁶It is true that the Northern Ireland chemist is paid for dispensing by the General Health Services Board and the Irish retail pharmacist by his customer, but this does not affect the work involved in dispensing nor the stocks which have to be maintained. If there is any difference the Irish public will pay sooner than the Northern Ireland Health Services Board.

⁷E3 page 54.

arguments *inter alia*. First, manufacturers continuously introduce new ethical preparations, some of which are superseded very quickly. This results in pharmacists often being left with stocks on their hands for which there is no further demand. Second, in making up a prescription they may require ingredients from manufacturers or wholesalers which can be purchased only in minimum quantities and exceed those required. In this way they will be left with an excess which may be unusable.

It is interesting to speculate what would be the margin required if dispensing could take place under ideal conditions. One pharmacist can dispense twelve prescriptions per hour; working 33 hours per week and 46 weeks per year, this means about 18,000 prescriptions per annum. He would also be able, according to the Grosset Report for Scotland, to supervise two dispensing assistants. The team could thus, assuming that the assistants work at the same rate, dispense 54,000 prescriptions per annum. Allowing for the pharmacist spending one quarter of his time on supervision this total should be reduced to 49,500. The ingredient cost of these prescriptions on the Northern Ireland basis of 9/- per prescription would be about £22,275. The cost of the team, paying the pharmacist a salary of £36 per week and the two assistants £18 per week, would be £3,744 per year. If £30 per week is added to this for all other expenses including rent, rates, superannuation, social security contributions, heat, light, insurance, interest on stock holding, the aggregate annual cost of the team would be £5,300, say 24 per cent of ingredient cost. These assumptions in respect of work load are light, of remuneration liberal and of costs conservative. In most hospitals and local authority dispensaries, as was shown above, the dispensing rate is higher and salaries distinctly lower. The £5,300 cost in ideal conditions compares with a margin of about £23,000 which would at present be charged for dispensing the same number of prescriptions.⁸

⁸Some pharmacists have suggested that this work load is too heavy. However, even if the pharmacist dispenses only eight prescriptions per hour and leaving all other assumptions unaltered, the cost of this team would only increase from 24 to 36 per cent of ingredient cost. The cost of £5,300 in ideal conditions would still compare with a margin of £15,000 under the present system.

The ideal conditions are based on the over-riding assumption that there is a regular flow of people presenting prescriptions. In reality this is not the case; people tend to present prescription at particular hours of the day. In many parts of the country the density of population is low and people prefer, if prices are the same everywhere, to obtain their medicine within reasonable distance of their homes.

At present the population per retail pharmacy (see Table 6) is much the same in the four Provinces and is only slightly lower in the Dublin conurbation. For the State the ratio was 2,339 per retail pharmacy in 1966, marginally higher than the 2,192 in 1956.

One third of the population is receiving prescriptions free of charge under the General Health Services scheme, though this proportion is much lower in the larger towns, and correspondingly higher in the rural areas. This gives an average population liable to require prescriptions of some 1,600 per retail pharmacy. As was shown in the section on the Private Purchase of Drugs and Medicines, the average expenditure on prescriptions per person in 1966 is unlikely to have been more than 23/-. This would allow for no more than 2.0 or possibly only 1.5 prescriptions per head, an exceedingly low figure if compared with 6.9 in Northern Ireland, 5.5 in Denmark and 3.1 in Canada. If each of these presents say 1.7 prescriptions per year, the number of prescriptions presented per week would be some 54, the dispensing of which would require no more than $4\frac{1}{2}$ hours of a pharmacist's time, hardly more than one tenth of his working week.

Even if one allows another four hours for work incidental to dispensing, the average pharmacist would spend less than one fifth of his working week on dispensing. Even if he dispensed eight prescriptions per hour this proportion would still be less than a quarter. All his staff—the average retail pharmacist has two assistants—would be engaged in other duties.

Finally, it is of interest to add that in Dublin drugs bought by the retailer are only slightly more expensive than those bought in London but distinctly cheaper than in Toronto. (See Table 18.) The table shows the very large scope for savings by substituting standard preparations for proprietary drugs.

TABLE 18: *Comparative Prices of Certain Ethical Drugs to Retailers in London, Toronto and Dublin 1966/67*

Trade Name	Generic Name	Strength	Original Size	London	Toronto	Dublin	Dublin Health Authority*
				£	£	£	£
Chloromycetin	Chloramphenicol	250 mgm.	100 tabs.	3·71	7·83	4·09	0·54
Achromycin	Tetracycline	250 mgm.	100 tabs.	3·26	5·83	3·60	1·20
Gantrisin	Sulfisoxazole	0·5 Gm.	100 tabs.	0·80	1·37	0·80	0·69
Decadron	Dexamethasone	0·75 mgm.	100 tabs.	4·68	5·77	4·95	0·56†
Librium	Chlordiazopoxide	10 mgm.	100 tabs.	1·00	2·38	1·00	0·74
Equanil	Meprobamate	400 mgm.	100 tabs.	0·95	2·38	0·69	0·11
Enovid	Norethynodrol with Mestranol	5 mgm.	50 tabs.	1·28	1·94	1·33	n.a.
Butazolidin	Phenylbutazone	100 mgm.	250 tabs.	1·76	5·12	1·93	1·25

*Figures relate to generic drugs substituted for the trade names listed and are bought in bulk.

†Decadron—Dexamethasone: Strength: 0·5 mgm.

Sources: London and Toronto—'Drug Costs and Prices', *Final Report of the Special Committee of the House of Commons, Canada*, (25885-1), 1966/67.

Dublin—Prices from two Retail Pharmacists on the basis of the 'Index List', Irish Drug Association, 1966-1969.

Dublin Health Authority—Prices supplied by Chief Pharmacist of the Health Authority in interview on 22nd September, 1969.

Sale of Proprietary Medicines

The Irish Drug Association, to which virtually all retail pharmacists belong, has as one of its functions to protect the economic interests of its members. There is no formal agreement between the Association and manufacturers to confine the sale of proprietary medicines and infant foods to retail pharmacies, but manufacturers are encouraged to adopt such a policy of their own volition. Furthermore, the Association tries to ensure that profit margins are standardized on all lines at 50 per cent on wholesale price and that pharmacists adhere to the prices recommended by manufacturers. The aim of the Association is thus to protect pharmacists as a group from the competition of other retailers and to prevent price-competition between themselves.

It appears that the Association with the co-operation of manufacturers has standardized the profit of 50 per cent on wholesale price without much difficulty. Price-competition between pharmacies in the sale of human medicines seems to be rare; for veterinary medicines, however, it is quite common. The Association's endeavour to confine the sale of proprietary medicines to retail pharmacies has not been so successful. An increasing number are sold in chain-stores as well as by general dealers in the rural areas. This is particularly the case for all medicines which are advertised on television and radio.

A small-scale investigation was carried out as part of this study in five large supermarkets in Dublin in November 1969, in order to ascertain the type, range and prices at which medicines were sold in these stores. Some proprietary medicines were sold in all five stores, varying from a range of 15 items in one store to 33 items in another. The combined total of 44 items falls into five broad categories: digestives, including laxatives (17), analgesics (6), respiratory medicines (5), tonics and vitamins (8) and antiseptics and ointments (5). Three of the items sold fall outside these groups. Infant foods, cosmetics and toiletries, which comprise a large proportion of pharmacy turnover, are also sold in these stores but were not included in the survey. In the five stores all items were sold at lower prices than those recommended in the Irish Drug Association Index List (April 1969)—a margin of 50 per cent on wholesale prices. However, the prices

in supermarkets varied, and fairly consistently one charged less than the others for the same unit. (Each size of each item has been taken as a separate unit.) In one supermarket 72 per cent of the units were at the lowest prices, while in another two this was true for less than a quarter. In the five supermarkets, 70 units which could be identified on the Irish Drug Association Index were sold. In addition, a few units were on sale but their size could not be identified or were different from those recorded in the Index. Almost a quarter of all units were sold at margins of less than 20 per cent, on wholesale price, about a half at margins between 20 and 34 per cent and the remaining quarter at margins over 35 per cent. This does not necessarily indicate the gross margin earned by the supermarkets as they may have purchased these medicines at a discount off the wholesale price.

A nation-wide survey on "Prescribed and Non-Prescribed Medicines" by the U.S. Department of Health, Education and Welfare, July 1964-June 1965,⁹ indicated that well over a quarter of total *per capita* expenditure on drugs and medicines was on non-prescribed items. (Some non-prescribed items were excluded because their inclusion as medicine was considered debatable, e.g. rubbing alcohol, petroleum jelly, or too personal to report, e.g. contraceptives). The proportion of non-prescribed medicines not purchased in drug stores varied considerably for different items. While over 80 per cent of the amount spent on preparations for asthma, hay-fever and peptic ulcer, was estimated to have been spent in drug stores, this was true for only about 50 per cent of the amount spent on aspirin including aspirin compounds and combinations. The report also indicated that *per capita* expenditure by women was slightly higher than that by men, for example, on aspirin and vitamins. In the United Kingdom the proportion of sales of proprietary medicines through groceries and supermarkets is rather lower than in the United States. For 1968 it is estimated to have been only 28 per cent. This varied from about 40 per cent for indigestion remedies and 30-35 per cent for analgesics to 5-10 per cent for vitamins and 10-15 per cent for rheumatic remedies.¹⁰

Many pharmacists argue that the sale of all medicines should

⁹E4.

¹⁰E5.

be restricted to pharmacies. They are aware, in the words of Dr. Cahal,¹¹ that "there is nothing which is completely safe at every dose for every individual in all circumstances". They refer to possibly fatal haematemesis which may result from taking aspirin, the kidney damage due to phenacetin and the arterial damage resulting from vitamin D. They mention the danger of children having easier access to drugs in a supermarket than in a pharmacy.

These facts are undisputed and well documented *inter alia* in the "Extra Pharmacopoeia" (W. Martindale).¹² The pharmacists' arguments for restricting the sale of medicines are also supported by some eminent medical men. Unfortunately, very little information is available about the nature and efficacy of the medicines purchased by the public without a doctor's prescription and this is even more true of evidence regarding the frequency of mishaps as a result of this.

Dr. Bradshaw, in his plain man's guide to patent medicines, discusses these matters in a scientific spirit but in popular language.¹³ In a whole chapter devoted to the properties of aspirin, he estimates that in England and Wales about 4,000 million aspirin tablets are bought every year. To this he attributes 12,000 cases of poisoning due to aspirin overdosage which prove fatal in 200 cases. His view on aspirin can be summed up by two quotations: "Of those two pain-killing drugs, however, morphine while powerful is correspondingly dangerous, whereas aspirin is neither", and "Enormous quantities of aspirin, prescribed and in patent medicine form, are taken every year, and yet one is not hearing all the time of people being made seriously ill by it. Provided one abides by the four simple rules . . . there is certainly no great harm in taking aspirin now and again and there can be a great deal of good in it". Dr. Bradshaw does not advocate the restriction of sales of aspirin to pharmacies.

Further information on aspirin can be gleaned from an investigation in Liverpool in 1964 on a non-random sample of 272 individuals aged between 15-30. This showed that only about six per cent of the age-group had never taken any aspirin

¹¹E6.

¹²E7.

¹³B2.

and the general tendency was for two aspirins to be taken every one to three months. Of those taking aspirin 90 per cent had not obtained it through a doctor and of these about two-thirds bought it at a chemist shop. Approximately three-fifths took aspirin for the curing of pain where it was pharmacologically effective. About 30 per cent took it for the curing of conditions where it had a minimal or no beneficial pharmacological action and about 10 per cent in conditions where it was either completely valueless or contra-indicated. The analgesic action of aspirin in therapeutics is accepted but it has been shown in one investigation that half of all patients are satisfied with the placebo effects of dummy aspirin tablets for the relief of headache. Wilson considers that the subjective and individual appreciation of the therapeutic effects of the drug must have a considerable psychological basis.¹⁴

In present-day society all kinds of risks are willingly undertaken in order to achieve or preserve that which is thought to be desirable. The reduced ability to control a car after the consumption of even a small quantity of alcohol is established beyond doubt. All the same, the random sampling of motorists to ascertain the level of alcohol they have consumed is considered to be inconsistent with the Irish, as it is with the American and British way of life. Similarly, the standard of safety of new motor cars which may be sold in Ireland (and Great Britain) is lower than that tolerated in the United States. There is no test of the road worthiness of a vehicle and many cars have mechanical faults or bald tyres. In these and other respects, the community is not willing to pay, or force others to pay, the price required to achieve a higher level of safety. The relationship between lung cancer and the smoking of tobacco is clearly established, but all the same smoking is permitted in all western countries.

The mere fact that drugs in certain circumstances, in some people, may lead to disease or undesirable side-effects is, in itself, not a conclusive argument to restrict their sales. The restriction of the sale of all drugs and medicines to pharmacies is a safeguard whose efficacy is more alleged than proven. In the last resort, a decision on whether to permit unrestricted

¹⁴E8, pages 151-154.

sales should be based on a careful weighing of the advantages and disadvantages and their respective magnitudes. A person advocating the restriction of the sale of any goods to any particular channel which charges higher prices than others, ought to prove his case beyond any reasonable doubt.

The arguments advanced by the Pharmaceutical Society in 1965, suggesting that profits on the sale of proprietary drugs are required to cover losses on dispensing, appear untenable under present conditions. The dual interest of the purchaser of branded medicines is to buy them at the lowest cost and to receive with each purchase exact instructions as to dosage and the conditions for which they should be taken and for which they should not be taken.

The Pharmaceutical Society in their submission to the Fair Trade Commission in 1956 claims that:

“The Society ensures, so far as is practically possible, the protection of the public in relation to their medicinal requirements.”

This claim is justified in two respects. The Society has been successful in ensuring that its members are competent in dispensing and capable of giving advice to the public. It has also succeeded in having the sale of toxic substances controlled by law. The Society, however, has interpreted its protection of the public only in respect of health hazards. It has not set out to ensure that they get good, or even fair, value for the money they spend on medicines.

Self-Treatment

Self-treatment of ill-health plays a substantial role in the day-to-day life of most people. The journal of the British Consumers' Association in an article on patent medicines in 1967¹⁵ writes “most people resort to occasional self-medication. We all need to be able to relieve headaches, ease sore throats, counteract hangovers, disinfect boils or soothe insect bites without seeing a doctor”. A report by the Office of Health Economics (“With-

¹⁵E9.

out Prescription", 1968) advised that self-medication should be studied as an important aspect of medical care and should be made as effective as possible. "People must be encouraged to select the most efficient remedy available for a particular ailment and they should be quite clear as to when they should visit a doctor."

The same view is most persuasively argued in an article in "The Lancet",¹⁶ in the series "Dogma Disputed", under the title "Self-Treatment As An Alternative To Rationing Of Medical Care". Here Dr. Cargill suggests the encouragement of self-treatment coupled with authoritative instruction on how to carry it out, and advocates easier access to the necessary drugs without prescription. The author feels that he cannot improve on Dr. Cargill's arguments and therefore, with permission, reproduces the article in full in an Addendum to this chapter.

It is likely that the ideal medical treatment available at the time was received by the late President Eisenhower in the Walter Reed Memorial Hospital, and it is beyond dispute that the same standard of treatment cannot possibly be provided for the whole population. Treatment by medical practitioners for any ailment is invariably preferable to self-treatment, but to provide such a service for the whole population is, in present conditions, impossible anywhere in the world.

A very different view was expressed by Mr. Sean Flanagan in 1968, the then Minister for Health, addressing a symposium held at Trinity College on "Drugs: Their Development, Use and Control":—

"I should like to avail of the opportunity to make a plea to the general public. It appears to me now to be commonplace for a person to reach for the bottle, not the bottle of whiskey, but the doctor's bottle, as a sort of cure-all for even the most minor upset. This sort of self-help and self-application of medicines and medical remedies can be very harmful. There was a doctor who once said that the person who wanted to cure himself should go to the green-grocer and not to the chemist, of course perhaps, over-simplifying things, but there was a solid basis for what he said."

¹⁶E10, pages 1377, 1388.

The Minister after making some comments in a jocular vein continued:—

“I do seriously mean what I say when I am appealing to the general public to give up this indiscriminate use of medicines by requiring that certain drugs be supplied by chemists only on prescriptions and I have recently made an order considerably extending this list of drugs which may be dispensed only by chemists or registered druggists and so forth”.¹⁷

The Minister was quite correct in pointing out that the self-application of medicines can be both very harmful and unnecessary. The public should be educated to appreciate that a sensible diet, reasonable amount of exercise, moderation in cigarette smoking and consumption of alcohol, as well as a calm and balanced attitude to life, go a long way to preventing and curing ill-health. Such conduct is not only effective, but has also the great advantage of being cheaper than any type of drug. The Minister however did not appear to appreciate that there is also a perfectly proper place for self-treatment. Doctors could not possibly cope in a situation where everybody consulted them even for the smallest ailment. In any case, for the vast majority of people in this country the cost of consulting a doctor may be disproportionate to the remedy which is required. Furthermore, if the doctor prescribes a particular drug or medicine, the very fact that he prescribes it adds 5/—the pharmacist's dispensing fee—to its cost. Nor would it be reasonable to expect people to wait patiently for nature to cure them when modern medicines and well-proven household remedies can greatly speed the process.

However, if people are to resort to self-treatment, it is clearly desirable that they receive proper education and instruction on how to apply it. This instruction could be given in a variety of ways. It could be in writing, along the lines suggested by Dr. Cargill. For some people this would give them all the guidance required, while others would find the written word more difficult to comprehend than oral advice. The giving of this advice might offer retail pharmacists a marked increase in scope for their

¹⁷E11.

professional competence.¹⁸ This would not be a new field, as pharmacists already set out to give advice. But the more organized and systematic encouragement of self-treatment, accompanied by education, would greatly extend this scope.

No systematic information is available to ascertain how frequently and in what circumstances pharmacists in Ireland give advice to the public. In Great Britain in 1965, National Opinion Polls carried out a survey on home medication for Aspro-Nicholas Products Ltd.¹⁹ This covered a probability sample of 2,163 adults aged 18-64. It showed that in the four weeks prior to the interview, approximately half of all people had suffered from some illness, ailment or complaint for which they did not see the doctor. In respect of these ailments 29 per cent were not treated at all, while 64 per cent were treated with a variety of medicaments of which tablets, at 40 per cent, were by far the most frequent. When asked the question "Have you ever taken advice about illness or health matters from . . .?" (respondents were shown a list comprising seven occupations), only 8 per cent mentioned a chemist. Some 86 per cent claimed that they had not taken advice from any of these. The relevance of this survey to Ireland, where not only economic and social conditions are quite different from those in Great Britain, but where the vast majority of the population have to pay their general practitioner and buy their medicines, must be considered as very doubtful.

A dilemma arises in deciding to what extent the role of the pharmacist, as an educator and advisor, justifies the restriction of the sale of medicines to pharmacies, or possibly to the pharmaceutical chemist himself. The present division of drugs into three groups—those which may only be obtained on prescription, those which may be bought without a prescription, but only in a pharmacy, and those which may be sold in any retail outlet—appears to be reasonable. The allocation of drugs to these particular groups requires specialized knowledge outside the competence of an economist. It should not be motivated by economic considerations such as the desire to maintain or increase the earn-

¹⁸The scope, limitations and difficulties of pharmacists giving such advice is discussed by Dr. Bradshaw in "Health, Education and the Pharmacist", *The Pharmaceutical Journal*, 15th June, 1968.

¹⁹E12.

ings of a particular trade or profession. Nor should it chase the unattainable ideal of absolute safety. Allocation should be influenced by an assessment of the statistical probability of the ill-effects the drugs might cause and the severity of such effects. It is for the experts, pharmacologists, pharmacists and medical practitioners, to produce all the evidence available, but the decisions should quite properly rest with the representatives of the public. It is not for the expert to decide whether serious ill-effects in one out of 50,000 persons taking a medicine is or is not a tolerable risk.

ADDENDUM

Reprinted from *The Lancet* 24th June, 1967

DOGMA DISPUTED

SELF-TREATMENT AS AN ALTERNATIVE TO RATIONING OF MEDICAL CARE

David Cargill

Medical care has to be rationed because there could never be enough doctors in the world for every person to have medical advice on each occasion that their patients suspect there may be something wrong with them. The rich countries have managed to arrange a system of rationing medical care similar to that which operates for food and other commodities; we have as much as we can get, and the poor countries have what is left over. But, even with a rich country, some kind of rationing has to operate. This may be done strictly by price, so that people with money get all the care they want, and people without it get just enough to stop them starting a revolution. Or there may be a system like ours, in which everyone is supposed to get all he

wants but in which the amount and quality of service are subject to many chance influences while those who shout loudest often get most. Within any of these systems many people ration themselves by applying their own treatment or ignoring the ailments which they judge to be minor. Other methods of rationing have been suggested. One (prescription charges) has been tried. A fee-for-service has been proposed by the British Medical Association. But it seems as though the National Health Service patient's first contact will soon be with an "auxiliary" (? nurse, ? feldsher) rather than with a doctor. I wonder if we could not reduce the total demand for care by encouraging intelligent and instructed self-treatment by patients.

There are two medical opinions about self-treatment. The first or official and scientific view is that self-treatment is to be utterly deplored, and that any apparent deviation from normal health should be fully investigated by a doctor before necessary treatment is carried out under close supervision. The second view, a favourite among doctors to whom patients have unrestricted access (G.P.s, casualty officers), is that people should learn how to treat their own minor maladies and "not to run to me with every finger ache".

There is almost everything to be said for the scientific view. The cough, the backache, or the spot of indigestion, for which the layman awards himself a dose of Gee's linctus, aspirin, or bicarbonate of soda, may be the first symptom of phthisis, spinal secondary, or coronary thrombosis. The otitis media which the G.P. treats with tetracycline may be due to a resistant organism. In fact, the only thing to be said against the scientific view is that it is quite impracticable. Even in a country with one doctor to less than every thousand of the population, a country which can afford to seduce doctors away from places where the proportion is nearer one to a quarter of a million, people have neither the time nor the inclination to bring every symptom to a doctor, and the doctors could not begin to cope with them if they did. Furthermore, even doctors have to treat most complaints unscientifically, on the principle of "shoot first and ask questions later, if at all".

We have, in fact, reached a compromise by which patients are allowed (indeed are sometimes encouraged and exhorted) to

treat "minor ailments", but are given no systematic instruction about which ailments really are minor, forbidden to buy the more efficacious drugs, and likely to be censured if they make a hash of things by mistaking a serious ailment for a minor one, especially if a child suffers harm as a result. Surely the time has come to adopt a more reasonable attitude to self-treatment. We know that it goes on, and we know that the medical services would break down on the day that it stopped. Why not give some authoritative instruction on how to carry it out and allow people to buy the necessary drugs themselves? Treatment could be on a strictly symptomatic basis. Instruction would be in the Press, on television, and in very simple pamphlets issued with the drugs. I suggest that oxytetracycline tablets and syrup should be sold freely, with a short simple instruction book. Oxytetracycline is preferred to other broad-spectrum antibiotics, because it is now the cheapest.

Instructions might take the following form: "This drug can be taken for earache, sore throat, cough with spit, yellow discharge from the nose, or painful redness of the skin. *But* consult your doctor if (1) the patient seems gravely ill; (2) the illness is not considerably improved by the morning after treatment has begun; (3) the illness is not quite cured after about three days; or (4) similar trouble occurs within three months. Treatment should be continued for four days, even if cure seems complete before then." There would be a note about expectant mothers, a dosage chart, and some detail about the various symptoms. Patients would be told, for instance, that a sore throat is not worth treating with this drug unless it causes pain on swallowing one's own saliva and/or is accompanied by fever.

Availability of this antibiotic would make self-treatment much more effective. It would dispose of a large proportion of G.P. consultations, a larger proportion of home visits, and a still larger proportion of late home visits; such a large proportion, perhaps, that it would still be possible to carry on the G.P. service ten years from now. The imminent breakdown of the G.P. service is still being dismissed as what James I called "ane bogle of the nurserie". This is difficult to accept when retirement vacancies in "nice places" go begging and when a practice of 2,600 in Frinton has to be broken up for lack of an applicant.

The Objection

The objections can be anticipated and, I think, met.

Most of these little troubles get better anyway.—True, but they take much longer. Patients will not put up with a week's discomfort or a night's fear when they know there is a remedy which is usually effective within twelve hours. They say "I'm sorry to trouble you but I don't know what to get. That red syrup works like magic."

It is unscientific to use a broad-spectrum antibiotic without a bacteriological diagnosis.—True; it is also unscientific to shoot a pheasant with the six-foot spread of a twelve-bore when you could bring it down neatly with a rifle, the trouble about using a rifle being that you are much more likely to miss.

Penicillin is often the drug of choice in upper respiratory infection.—True, I am told, although I am still waiting for someone to tell me why; but untoward reactions to penicillin are common, to the tetracyclines they are rare.

Strains may become resistant if antibiotics are used indiscriminately.—True; but tetracyclines have been used indiscriminately by G.P.s for a decade, and most of the resistant strains seem to be bred in hospital where the treatment is under scientific control.

Serious maladies might be masked or medical aid delayed.—True; but available self-treatment drugs (e.g. aspirin) can mask symptoms. In practice it is usually pretty obvious within a few hours whether an antibiotic is or is not going to work.

Powerful drugs should only be used under strict medical supervision.—True, I suppose; in most cases of antibiotic treatment the patient is seen once and given a prescription, with instruction to report if the disorder fails to improve. No-one could call this "strict supervision". Little harm seems to result.

Education in self-treatment, again on a symptomatic basis, could sensibly be extended to other fields. Most doctors know of lives lost because no-one could apply the simplest first-aid. People are discouraged from learning because it is made much too complicated. The circulation of the blood is probably beyond the comprehension of most of the population, but you do not have to comprehend it to be able to stop a serious haemorrhage.

VII. FUTURE DEVELOPMENTS

Government Proposals

In the White Paper on "The Health Services and their Further Development" which was published in January 1966, the government proposes for persons covered by the General Medical Services Register "a service with the greatest practical choice of doctor and the least practical distinction between private patients and those availing themselves of the service". In respect of pharmaceutical services for "persons with full eligibility" (formerly the lower income group) the White Paper states:—

"It would be possible in a scheme with choice of doctor to arrange to supply drugs, medicines and appliances through dispensaries or other health authority channels. This arrangement would have considerable attractions, not the least being its economy. However, the Government accepts that if a choice of doctor is to be given on the lines set out, it would be preferable if those using the service were entitled to get their drugs, medicines and appliances through the same channels as the doctor's private patients, that is the retail chemist or the doctors themselves in areas where there are no chemists. It is, therefore, hoped to negotiate a satisfactory and economical scheme with representatives of the retail pharmaceutical chemists under which prescriptions given by doctors to patients under the service would be dispensed by retail chemists from stocks supplied by the health authority". (Para. 48).¹

The White Paper also proposed better and more formal arrangements for the health authorities to assist persons with "limited eligibility" (middle income group) in obtaining drugs where undue expense arises. It was envisaged that these persons would be able to obtain assistance where their private expenditure on prescriptions in a fixed period exceeded a certain sum. This was thought to have the attraction of administrative simplicity in that those availing themselves of assistance would do so only

¹F₁

when they encountered hardship. It was expected that persons of limited eligibility would pay part of the cost of each item supplied.²

The Health Act, 1970, implements most of the proposals contained in the White Paper. The Department of Health had in the intervening period been engaged in negotiations with the retail pharmacists about the means of providing medicines to persons with full eligibility. In the second reading debate in April 1969, the Minister for Health referred to a large measure of agreement which had been reached on the means by which such a service would operate. At the time no final agreement had been made and the Minister did not announce any details. The general trend of the Minister's speech gave the impression that the intention contained in the White Paper for retail chemists to dispense "from stocks supplied by the health authority" had been dropped. Instead it appears to be the intention to contract with retail chemists to dispense prescriptions free of charge to persons with full eligibility. The chemist would supply the medicines from his general stocks and forward the prescriptions to a government pricing bureau. The prescriptions would be priced in the bureau and the chemist would be recompensed for the cost of ingredients used in the prescriptions and also paid a fee for his services. It is not possible to surmise from the statements made by the Minister whether this fee would be an on-cost on the value of the ingredients, a professional fee or a combination of the two. The Department of Health would be able to negotiate with the drug manufacturers to receive a discount in respect of the cost of ingredients utilised in the dispensing of these prescriptions.

The Act also introduces important provisions to safeguard persons with limited eligibility against having to meet high expenditure on drugs and medicines unaided. The details of the scheme are not contained in the Act. The Minister in the debate described it:—

"It will be clearly spelled out that expenditure by a person with limited eligibility over a specified amount in a period of, say, a month will be recoupable in whole or in

²F1, Para. 54 and 55

part by the Health Board. The minimum amount will be specified by regulations and will not be determined until this new provision is coming into operation but it is intended that it will be a sum which a person in the middle income group could readily afford to pay himself. Two pounds a month might be an appropriate figure."³

The Minister's phraseology seems to imply that the present unpopular procedure of supplying free medicines to hardship cases only after an individual means test is to be terminated. It will be replaced by a scheme which gives entitlement to reimbursement on expenditure merely on evidence of having spent a certain sum over a period of time.

A third provision in the Act authorizes health boards to supply drugs for long-term diseases and disabilities without charge to persons of all income groups. The diseases covered will include diabetes, cystic fibrosis and phenylketonuria.

The Minister estimated that the aggregate cost of these three provisions relating to pharmaceutical services will require an additional outlay from public funds of between £½m. and £1m., say an increase over current expenditure in the region of 25 per cent to 50 per cent. This may well turn out an underestimate in real terms apart from the inflationary changes which are going to take place in any case. The White Paper recognizes the right of each doctor to prescribe for his patient whatever is reasonably necessary. The medical profession will agree to various measures designed to discourage prescribing expensive proprietary brands where there is a suitable non-proprietary analogue. These measures will be quite as unsuccessful as similar attempts in Northern Ireland have been up until now.⁴ At present, a large proportion of the medicines issued to lower income group patients are not branded. It seems exceedingly probable that this proportion will greatly diminish under the new arrangements as indeed it has already done in recent years.

Under the present arrangements when drugs are dispensed in dispensaries by pharmacists, as they are in the larger towns, the

³D1, Col. 1640.

⁴D2, para. 71.

cost in respect of salaries is very low. In these dispensaries there may be a greater degree of wastage of drugs due to deterioration and there may be a greater leakage than in private chemist shops, but the cost of these stock balance losses is not known, nor can they be estimated.

Experience in Northern Ireland leads one to suggest that doctors who prescribe are more liberal than their colleagues who dispense for their own patients. It seems only reasonable that a doctor who wishes a patient to take a particular drug will prescribe it without hesitation but if he also dispenses he will be aware if the drug is not in stock and dispense to the patient the most suitable drug which is available at the time.

The cost of medicines is so great that many people will find it difficult to resist the temptation to abuse both the scheme providing free drugs to persons with full eligibility and the restricted schemes subsidizing the price of drugs in certain conditions. There is a danger that persons entitled to these benefits will be used as buying agents by their families and friends. These abuses could be reduced if doctors gave without fail the full name, age and address of the patient on each prescription. In theory it would be possible in the pricing bureau to discover combinations of drugs which could not possibly have been taken by one individual. The phraseology used by the Minister seems to indicate that the suggested expenditure limit of £2 per month will apply to a household rather than an individual. This will make detection of abuse decidedly more difficult. Like with many abuses, the fraud committed by the man who uses discretion is difficult to discover. The blatant large scale fraud is, of course, another matter. It will also be difficult to discover if a doctor by mistake makes out a prescription on a form which gives entitlement to free medicine to a person not eligible for it. To check each prescription for entitlement would present great difficulties, especially if a patient may have prescriptions dispensed in any pharmacy of his choice.

At the time of writing the terms on which retail pharmacies will provide services to different categories of persons receiving free drugs and medicines is not known. The Department is in a strong bargaining position as retail pharmacists all over the country are grossly underemployed as regards dispensing and, there-

fore, any fees they receive could be considered almost entirely as an additional net profit.

From the Minister's speech it appears that there will in future, as in the past, be no control whatsoever in respect of prices charged for dispensing private prescriptions. The intention is to subsidise the patient who incurs heavy expenditure on drugs without controlling the price. In a service where the margin is high by any standards this is a policy which not merely offers no financial safeguards to the middle income group, but may also lead to an excessively high expenditure of public funds.

Characteristics of the Service

The outstanding characteristics of pharmaceutical services in Ireland appear to be the low number of prescriptions per head per year (1.5 to 2.0), the low average number of hours pharmacists spend in dispensing (5 hours), the high margin on prescriptions (approximately 80-100 per cent), the relatively large proportion of all expenditure on medicines which is spent on non-prescribed proprietary drugs and household remedies (over 50 per cent) and the low average sales of retail pharmacies. No information is available about the prescribing habits of general practitioners for their private patients, especially on the proportion of non-branded preparations prescribed.

The low number of prescriptions per head is strictly speaking not a feature of pharmaceutical services and is only relevant as it is one of the factors determining the amount of services required. The low number may be a reflection of a low consultation rate which itself is caused by the deterrent of having to pay a fee when consulting a doctor. This suggestion is supported by the fact that in Northern Ireland and Denmark prescription rates are much higher than in Canada and the United States⁵ in spite of the fact that North American standards of living are higher than those in the other two countries. Alternatively or additionally, the low prescription rate may be the result of the training of Irish doctors which might have given them in the past different attitudes towards therapeutics than doctors in other countries. In any case, it seems probable that increased incomes and in-

⁵E4.

creased urbanization will lead to a gradual increase in the prescription rate per head.

The time retail pharmacists spend in dispensing will in future increase, not only for the reasons outlined above, but also because they will take over, under the Health Act, 1970, the dispensing for persons with full eligibility. This is likely to double, and possibly more than double, the present volume of dispensing when the free choice of doctor for persons with full eligibility is introduced. These trends will be accentuated by the gradual decline in the number of retail pharmacists due to the age structure of the profession. Nevertheless, it is unlikely that for many years to come the average time spent on dispensing will exceed 15 hours per week—three times what it was estimated to be in 1966. The estimate of five hours per week (for 1966) is based on all prescriptions being dispensed by pharmacists and makes no allowances at all for 340 pharmaceutical assistants working in retail shops.

It may be argued that a university trained pharmacist, even if he spends all his time in dispensing, is not utilizing his training, skill and experience to the maximum advantage unless he supervises one or two pharmaceutical assistants.

It is difficult to accept the fear expressed in the Cashman Report that the number of pharmacists will in future be insufficient to provide an efficient and reasonable service. A smaller number organized in such a way that they are able to utilize their professional knowledge effectively could render services which are at least as good as the present ones. The number of pharmacists practising in retail pharmacies in 1970 is able to dispense several times as many prescriptions as they do at present.

The high margin on prescriptions appears to be due to two factors: the apparent unwillingness of retail pharmacists to compete against each other and the small number of prescriptions which are said to increase overhead costs (by that it is meant that a fully qualified pharmacist is required even if the dispensing load is minimal). As mentioned earlier, the presence of a qualified pharmacist is also required for the sale of a number of substances on the poison register which may be sold without prescription.

It is difficult to justify a dispensing margin which is the same in all parts of the State; why a busy pharmacy in Dublin having a

large number of prescriptions should charge the same fee as a pharmacy in a village where the number of prescriptions presented is correspondingly small. It would be more reasonable if the prescription margin was related to the cost of the service rendered. This is what happens in Northern Ireland where in addition to the normal flat-rate dispensing fee of 2/2, there is an on-cost allowance of 30 per cent for each prescription for chemist contractors dispensing 250 or fewer per month while the allowance for those dispensing more than 1,000 per month is only 10.07 per cent. Such a system takes reasonable account of differences in cost and allows chemists to operate economically in sparsely populated areas. In Denmark, prices for medicines are fixed by a public body and it is recognised that the uniform prices operating all over the country are too low to permit a pharmacist who operates in a sparsely populated area and has a low turnover to make a reasonable profit. For this reason such pharmacists are subsidized by a public body. The Irish system—or rather lack of system—by which retail pharmacists agree between themselves on what are appropriate charges makes for prices which are high enough to allow operation in the least favourable conditions. This system makes not so much for high profits, as for a large number of retail outlets. In Northern Ireland, where the prescriptions per head are estimated to be three times as great as in the Republic, the population per retail pharmacy is about the same. This discrepancy in the number of prescriptions dispensed between Northern Ireland and the Republic is even more accentuated when it is remembered that in Northern Ireland all prescriptions are dispensed by retail pharmacists, while in the Republic, one third of the population are catered for by the local dispensaries.

It is interesting to note that the estimated population per chemist shop in Ireland was one of the lowest in Europe in the early 1960's.⁶ It was then about 2,400 in Ireland, 3,500 in Great Britain, 5,000 in Italy, 6,000 in Germany, 9,000 in Austria and very much higher in the Scandinavian countries.

The relative importance of non-prescribed medicines or, put differently, the apparently high level of self-medication is, at least, partly due to the absence of free or subsidized general

⁶F2, i, 395.

practitioner services for about two-thirds of the population. This makes it all the more important that these medicines are used in the most sensible and efficacious way and that they are available at fair and reasonable prices. Why should a drug which sells fairly rapidly and presents no special storage problem be sold at a higher mark-up than grocery lines which have the same characteristics?⁷

The Role of the State

The duties of the State in respect of pharmaceutical services can be classified under six headings. One, to restrict the sale of toxic and dangerous drugs; two, to assure that drugs are distributed safely by adequately trained and competent personnel; three, to encourage a system of distribution which makes medicines available in all parts of the State; four, to subsidize the supply of medicines so that all citizens can obtain the medicines which are prescribed for them; five, to make certain that public funds spent on subsidizing or supplying free medicines are not misused or abused; six, to make certain that medicines are available to all sections of the population at fair and reasonable prices.

The misuse of amphetamines, L.S.D. and marijuana are at present under review as are other dependence producing narcotic drugs; further restriction of their supply may be anticipated. These subjects, however, are outside the scope of this paper. So also is the very important subject of controlling the quality of drugs which may be sold. It does not need to be emphasized that society must regulate the quality, purity and safety of the medicines which are offered for sale. It is not sufficient for the formula to be approved, it is equally important to assure that the formula is adhered to. The present provisions for the training of pharmacists are adequate to enable them to dispense drugs safely.

⁷In Britain, The Health and Beauty Aid Study estimates that in 1964 the gross profit margin on medicines in grocery stores and supermarkets was at least two-thirds higher than on dry grocery products. At these stores, of course, the public receive no advice when buying medicines. In British retail pharmacies the gross margin for these medicines is still higher.

It is, however, doubtful whether the present ratio of one to one of pharmacists to pharmaceutical assistants qualifying is most appropriate. The changing pattern of pharmacy may well require in hospitals, retail pharmacies and other areas, a larger proportion of assistants. High standards of training give pharmacists the ability to dispense medicines safely. They do not necessarily assure that they are dispensed safely. The Pharmaceutical Society employs an Inspector to ensure the proper observation of the Pharmacy Acts, related legislation and the regulations made by the Minister for Health for the protection of the public. He is concerned, amongst other matters, with the presence of a pharmacist when medicines are dispensed or toxic substances are sold. It is, however, all too easy at present for a pharmacist to sell medicines freely which should only be sold on prescription.

The number and geographical distribution of pharmacists is more than adequate to provide easy access throughout the State. If at all, the number of retail pharmacies is excessive, taking into account the general mobility of the population, their shopping habits and the comparatively low number of prescriptions dispensed. The fact that, in general, retail pharmacies compete in service but not in price, makes it impossible to ascertain what degree of preference there might be for buying medicines at lower prices in the centre of larger towns rather than at higher prices in the local pharmacies.

In England and Wales doctors may dispense, subject to the approval of the local Executive Council, to any of their patients who reside more than a mile from the nearest retail pharmacy. On these very urban standards, a substantial proportion of the population in Ireland is outside this radius. The scheme for the supply of free medicines to persons with full eligibility, authorised by the Health Act, 1970, contains provisions to permit doctors in rural areas, as in Denmark and Northern Ireland, to dispense for patients who live more than a certain distance from a retail pharmacy shop. It would be uneconomic to have pharmacies within a range of even three miles of every person who is limited in his mobility and requires medicines. In future, different methods of distributing medicine from the traditional ones might be developed. There may be travelling pharmacies with a pharmacist in charge who would visit daily possibly half a dozen

villages. Alternatively, systems might be devised by which patients leave a doctor's prescription at the general store or sub-post office in the morning and collect their medicines in the afternoon or next day. The transport of the prescriptions and the medicine could be arranged by the pharmacist or possibly through the Post Office.⁸

The Health Act, 1970, contains the proposals of the Government for subsidizing medicines. They are a continuation of the ideology which was the base of previous legislation. The underlying idea remains that everyone should provide for himself and that the State should only help those who, on account of low income or particularly heavy expenditure on medicines, cannot take care of their own needs.

The fifth duty is to make certain that public funds spent on supplying free and subsidised medicines are not misused or abused. The possibility of abuse by the patient has already been discussed. (Section VII, page 77.) In addition, the new scheme of supplying free and subsidised drugs and medicines might be abused by pharmacists who do not adhere to their professional standards. A doctor might prescribe for a person with full eligibility a prescription for which the charge is £4 or £5. The pharmacist presenting this prescription to the pricing bureau would be paid that amount, but the patient might have been given a medicine for which the appropriate charge would only be a fraction of this amount. The pharmacist's motivation for this would be to increase his income by abusing the scheme. Mere negligence in erroneously dispensing the wrong medicine would be a misuse of public funds. The person presenting the prescription is by law entitled to be dispensed the medicine as prescribed. It is not suggested that abuse and misuse on a large scale are likely. However, any scheme which has in-built safeguards will operate more effectively than one which relies entirely on the profession's integrity. It is, therefore, highly desirable for the new system of distributing medicines at public expense to incorporate provisions for test checks on prescriptions as is the practice in Northern Ireland. In the first year or two these might well have to be rather more frequent and elaborate than would be required thereafter.

⁸This may require an amendment of the Poisons and Pharmacy Acts.

It is in respect of the sixth duty that there is still considerable *scope for action*—the availability of medicines to all sections of the population at fair and reasonable prices. The recommendations of the Fair Trade Commission Report, 1956, advocating the prohibition of certain restrictive practices in the distribution of medicines, have not been implemented. This does not mean, however, that these recommendations and the reasoning underlying them have been without effect. The Report seems to have created a *climate of opinion* which has favoured the increased sale of proprietary non-ethical drugs in chain-stores and general grocery shops at lower prices than those charged in retail pharmacies.

VIII. PROPOSALS FOR REDUCING THE COST OF MEDICINES

Sale of Non-Branded Preparations

Four measures might be considered to reduce the cost of medicines. First, increased sales of non-branded standard preparations; second, new agencies for dispensing prescriptions; third, a control of drugs scheme and fourth, licensing of retail pharmacies. None of these are a panacea. All are controversial and all, while reducing the cost of medicines, would affect some interests unfavourably. At present, it is difficult in many parts of the country and in many pharmacies to purchase non-branded standard preparations. It would certainly be in the public interest if these drugs were more widely available and if the public were made aware of the similarity or identity in therapeutic efficacy of branded and non-branded products. This field offers great scope for the pharmacist to use his professional knowledge.

The quality of non-branded medicines is sometimes considered suspect by pharmacists. Appreciable quantities of drugs are imported from sources which in many cases are not well known. This subject was discussed by Professor Timoney in a lecture on "Quality Control of Drugs in Ireland", in which he suggested that "it is desirable that a system of quality control, suitable to the needs of this country, should be established to

provide additional safeguards in the maintenance of recognized specifications".¹ The acceptance of such a proposal, especially for non-branded preparations, could possibly lead to an increased willingness of pharmacists to sell such drugs.

The professional standing of the pharmacist is at its lowest when he sells medicines which are promoted by mass advertising, while it is at its highest when he gives advice to the public on the medicines they require. Pharmacists working in retail shops, in giving advice should appreciate that the efficacy of the medicine is not the only concern of the public, but that there is a desire, as in the purchase of other goods and services, to get value for money.

In theory it would be possible to design various schemes to encourage the sale of non-branded medicines. One might be to make it compulsory for manufacturers to print the name of the equivalent standard preparation on the label of the proprietary drugs which they sell. Thus, every bottle of codis might have to have on its label the phrase "equivalent to codeine compound tablets B.P." Alternatively, it might be made compulsory for all proprietary medicines to be registered and to be given a number so that any member of the public could go to a retail pharmacy and ask by number for a non-branded preparation equivalent to the branded one he saw advertised. All these and similar suggestions are at present being discussed in the United States both for the Medi-care programme and also for private prescriptions. Some attempts at coding generic and proprietary drugs have also been unsuccessfully attempted in Great Britain. It would not be expedient for a small country such as Ireland to take on a task where much more powerful governments have not yet succeeded. In any case, it would be imprudent in the present state of economic development to take any steps which might antagonise the pharmaceutical industry and discourage its further expansion in this country.

Channels of Distribution for Prescriptions

The second measure for reducing the cost of medicines relates to prescriptions. The high price of prescriptions is not due to

¹110.

the ingredient cost being greater in Ireland than in other countries—we have shown in Table 18 that this is not the case. It is the result of a high margin between the ingredient cost and the price paid by the customer. Retail pharmacists have a high *esprit de corps* and adhere to the unwritten rules about charges for dispensing services.² These rules are clearly in the interest of the profession but not necessarily in the interest of the customer. As was argued earlier, the high margin has contributed not so much to excessive profits but to an excessive number of shops.

In many countries there seems to be a trend towards a three-tier system of distribution.³ One type would be a pharmacy concerned mainly with dispensing medicines on prescriptions. Another would be on similar lines to most retail pharmacies at present but in future would sell less photographic goods. These will increasingly be sold in specialist shops. Chain-stores and general grocery shops will continue as the third outlet for well-advertised proprietary medicines.

In Ireland, the local dispensaries in the larger towns are a good example of a distribution channel where prescriptions only are dispensed and where no other medicines or goods are sold. Under the new Health Act they will cease to operate, presumably as from Spring 1971. Unfortunately, they are part of the dispensary system which, at least in the towns, is widely unpopular. For this reason, whatever advantages they may have had cannot be preserved. In Northern Ireland, the new health centres will have attached to them pharmacies which only dispense prescriptions and this clearly is the modern trend.

The time may be opportune to experiment in Ireland with some different channels for dispensing doctors' prescriptions. A new agency or body might be set up to dispense at prices well below those charged by retail pharmacies at present. A charge to

²It is still the normal procedure for prescriptions to be coded so as to show the price charged by one retail pharmacist as a guide to others. This was considered as undesirable by the Fair Trade Commission who thought that by promoting uniformity of prices, it may induce a retail pharmacist to charge a higher price than he might otherwise charge. The Commission recommended to the Minister that the coding of medical prescriptions should be prohibited.

³G1, page 20.

cover ingredients plus a dispensing fee of 4/- or the standard retail price without a dispensing fee, whichever is the lower, should yield an income sufficient to pay salaries and expenses at the same rates as assumed in calculating costs in Chapter VI (page 59). This supposition is subject to the important conditions that these reduced prices would be able to attract sufficient business to keep a pharmacist and two assistants reasonably occupied. By this is meant that they would have to be occupied at about half their maximum capacity, for 33 hours per week.

The fees suggested are very similar to those paid by the National Health Service in Northern Ireland—10·07 per cent on cost to chemist contractors dispensing more than 1,000 prescriptions per month, plus a dispensing fee of 2/2 per prescription, plus 2½d. for container and other allowances. At 1968 prices these contractors in Northern Ireland were paid a remuneration above ingredient cost of about 3/3 per prescription. The suggested charges for the new agency in Dublin thus appear realistic in spite of the fact that they would be lower on average by about 6/- than the price normally paid to Dublin retail pharmacists for a prescription.

These agencies would have to be run on a proper economic basis, with stock control and without subsidies from public funds. However, they would be entitled, and should be encouraged, to advertise the fact that they are charging lower prices than retail pharmacies. Knowledge is an essential characteristic of fair competition and advertising the fact that prices are low is in no way unethical. The prohibition of such advertising as unprofessional is itself a restrictive practice. It is not suggested that such pharmacies should be opened all over the country. They would obviously be an economic proposition in the larger towns and it would be reasonable to start them in the working-class areas of Dublin and Cork in the first instance. These new-style pharmacies would buy supplies at exactly the same terms as retail pharmacists and be liable to turnover tax. They would be non-profit-making and could be organised either as state-sponsored bodies or run by the local authorities or by some voluntary organisation. The capital involved in starting such a pharmacy would be in the magnitude of £10,000. In the Irish climate of opinion it would appear desirable and feasible for such

pharmacies to be organised and managed by voluntary organisations.

It is true that these pharmacies would not benefit the poorest section of the community which is provided with free medicines under the government scheme, but it would provide medicines at much reduced prices to many people with limited eligibility to health services who all the same live on very moderate incomes.

Already the State participates and sponsors a large number of economic activities and it may be argued that a further extension is not desirable and would be opposed by many sections of public opinion. If voluntary organisations do not come forward it may then be necessary for the State or local authorities to obtain statutory powers to establish non-profit-making pharmacies. Such power would not be needed by voluntary organisations using their own funds.

Why should a religious order not set out to provide such a service? The care of the sick has traditionally been a function of the Church and to help lower the price of medicines may be a proper extension of this task in modern conditions. There may also be religious or other charities which could take up this task.

These new-style pharmacies would be clearly opposed to the economic interest of retail pharmacists. They would consider it as an encroachment on their legitimate economic interest and in spite of all the safeguards outlined in this proposal would consider the competition by non-profit-making bodies as unfair. However, no economic interest can be considered as sacrosanct. Changes in technology, in export demands or in taxation, affect on occasions some economic interests favourably and others unfavourably.

The Third Programme of Economic and Social Development covering the years 1969-1972 refers to the professions in both the chapters headed "Restrictive Practices" and "Incomes Policy".⁴ It acknowledges the fact that many professions adhere to restrictive practices:—

"It would be clearly unfair to expose some sectors of our society to competitive market forces while others retained positions of immunity or privilege. . . ." (Chapter X, para. 4.)

⁴G2.

and in the later passage:

“Professional services are subject to codes of practice which, although often designed to ensure standards, eliminate or restrict competition. Remuneration is largely determined by scales of fees or charges settled by the professional associations themselves or by statutory authorities which are in the main composed of members of the professions concerned.” (Chapter X, para. 5.)

It recognizes that the practice of calculating fees as a percentage of the value of transactions can add to inflationary pressures and cause discontent among groups whose incomes are not automatically adjusted to rising prices.

The practice of retail pharmacists to charge a 50 per cent on-cost on the price of ingredients is a measure of the kind questioned in the Third Programme. For other reasons this practice is also undesirable. The charge for any service should be related to the time and skill required in rendering it, that means the cost involved. There is little reason to think that to dispense a medicine for which the ingredient cost is £3 is necessarily more skillful and time-absorbing than to dispense one for which the ingredient cost is 3/-. Solicitors and others charging on a percentage basis claim, with possible justification, that the degree of responsibility involved in a transaction of high value is greater than in a transaction of low value. Pharmacists cannot make this claim. There is no reason to think that the toxicity of drugs is in any way related to their price.

In Canada, there is a marked trend for pharmacists to move away from charging for prescriptions on the basis of cost plus a fixed percentage, to cost plus a professional fee. Such a method is not only more rational but also socially more desirable. There is no reason why a patient with the misfortune of requiring a new, sophisticated and expensive medicine, should for that reason alone make a larger contribution to the pharmacists' expenses and profits than a person who requires a medicine for which the ingredients are quite inexpensive.

It may well be that the standard of service given by the new-style pharmacies will be rather lower than that by the private retail pharmacists in the sense that people might have to wait

longer for their prescriptions, possibly call back for them, travel further to the pharmacy and incur expense in doing so. All this, however, would be a matter of individual choice. The crucial difference between the proposed pharmacies and the old dispensaries is that the former will compete freely with retail pharmacies and will be patronised at the choice of an individual, while the old dispensaries had a captive clientele who had no alternative but to stand in line and wait their turn.

In deciding on the desirability of this proposal, the economic interests of retail pharmacists which would be hurt must be balanced against the advantages persons of limited eligibility would receive in being able to buy drugs cheaper. A man with about £15 per week gross and three children would belong to this class. The difference to him of paying 20/- rather than 14/- for a prescription is a matter of some consequence.

Control of Drugs Scheme

The third measure for reducing the price of medicines is equally controversial. In Northern Ireland, as in Great Britain, doctors enjoy complete clinical freedom to prescribe any drug they consider in the best interest of their patient. They are exhorted and encouraged to prescribe standard preparations but with indifferent success. In Denmark, there is a rather complicated system by which the State subsidy to the Insurance Fund and the subsidy of The Fund to the individual for prescriptions is determined both by the nature of the illness and of the drug prescribed. The system is meant to influence the prescribing habits of doctors. In Ontario, a scheme started in January 1970 with the voluntary co-operation of the drug manufacturers, retail pharmacists and medical practitioners. This enables a practitioner to mark a prescription by the letters C.D.I. (Controlled Drug Index), indicating that the pharmacist may dispense any medicine within a specific group which the Department of Health, after having tested all brands in that group, considers to be equivalent. The doctor may prescribe any drug and be certain that this drug will be dispensed to his patient if the prescription is not marked C.D.I.

To permit doctors in Ireland to prescribe medicines absolutely at their discretion for persons with full eligibility may turn out to be very much more expensive than the Minister estimated in the second reading debate of the Health Bill. In any case, it is questionable whether such complete clinical freedom does not involve expenditure of public funds which could be spent to greater advantage in other directions. The danger of over-prescribing will be all the greater when doctors under the new scheme compete with each other for patients to register with them. Doctors participating in the new scheme of general practitioner services for persons with full eligibility will assert their traditional claim to full clinical freedom in prescribing. Whether this claim should be conceded to is a matter of legitimate public interest and should not be decided solely by the medical profession. In any given clinical situation a doctor might consider a particular type of treatment, for example an operation or hospitalisation or a domiciliary visit, to be in the patient's best interest. Whether the patient receives these services is determined by the availability of resources, influenced possibly by the length of the patient's purse or by the size of the health authority budget. It is difficult to understand why unfettered prescribing deserves a higher priority than other desirable medical measures. In any case, some consideration should be given to schemes similar to that operating in Ontario, encouraging the dispensing of less expensive preparations.

Licensing of Retail Pharmacies

This study has clearly brought out that the average retail pharmacy in Ireland has a small turnover and dispenses few prescriptions. It, therefore, requires a comparatively large retail margin to yield even a moderate profit to the proprietor. The increased prescriptions under the Health Act, 1970, and the general trend for more prescriptions to be presented with increasing standards of living will remedy this to some extent in the future.

In Northern Ireland, where average sales per retail pharmacy are two-thirds higher, the Pemberton Report suggested government measures to reduce the number dispensing under the

National Health Service. A system of rationalisation (restriction of numbers) involving the licensing of retail pharmacies would lead to a reduction in unit costs. Such a measure—"the planning of a rational geographical spread of pharmacies"—is one of the recommendations of the Cashman Report.

In Irish conditions anyone suggesting the licensing of retail pharmacies has to make a case showing why they should be licensed while all other shops are left unrestricted. The same considerations which make larger pharmacies more economical to operate than smaller ones apply to some extent to most other shops. Nor is it a good argument to suggest that medicines are exceptionally important; the same could be argued for bakeries or grocery shops.

There are, however, three respects in which retail pharmacies differ in a significant and relevant way from other retail outlets. First, no other retail shop needs to be in the charge of a person who has a statutory qualification all the time it is open. Second, the sale of many goods sold by retail pharmacists are subject to various regulations. Some may not be advertised or offered for sale, others may only be sold to certain categories of persons or subject to a medical prescription. Third, as from April 1971, on average, nearly half of all medicines dispensed will be paid for out of public funds. The State, therefore, has a clear financial interest in the efficient operation of retail pharmacies which is different from its interest in the efficiency of other retail outlets. On aggregate, these three factors are a sufficient justification to consider retail pharmacies as *sui generis*.

While a reduction in the number of establishments would reduce overhead costs per unit of sales, this would not necessarily be passed on to the public in lower prices. The object of licensing, which is to reduce costs and prices, could therefore, only be achieved if it was accompanied by a system of price control. In Denmark, where retail pharmacies require a licence, there is an elaborate system of price control. In Northern Ireland, where a limitation on unrestricted right of entry of registered pharmaceutical chemists to the National Health Service list is recommended, virtually all medicines dispensed are paid for out of public funds and the remuneration of chemist contractors is fixed by regulations.

In Ireland, the remuneration of retail pharmacists for dispensing medicines under the Health Act, 1970, will also, after negotiations with the Pharmaceutical Society of Ireland, be fixed by order. At present there appears to be no intention of regulating prices paid by persons not covered by the Health Act. One possible method of price control would be for the Department of Health to negotiate with the Pharmaceutical Society not only the remuneration of retail pharmacists for dispensing medicines for persons with full eligibility, but also the prices at which medicines are dispensed to members of the public who have to pay for themselves. *Inter alia* this could be justified by the contingent liability of the new Health Boards to pay in whole or in part for all medicines. This arises out of the duty which will be imposed on them to recoup expenditure over a specified amount per month to persons with limited eligibility. A control of prices ought to take a somewhat complicated form to allow for the fact that costs differ according to turnover. This might require either higher charges in the sparsely populated areas or a system of subsidies for retail pharmacies operating in these areas, similar to the Danish scheme.

The enforcement of maximum prices for the dispensing of medicines by retail pharmacists would present some difficulties. If it were made compulsory for the pharmacist to put the price he charged for a medicine on the prescription form, this would enable the public to produce evidence in a possible complaint for over-charging.

Merely to restrict retail pharmacists from commencing to "keep open shop" without a licence would be a very slow way of reducing their number. A more effective method would be to introduce a general system of licensing and refuse a licence to some existing pharmacies in areas where the number of pharmacies is judged to be excessive. This could not be undertaken without a scheme of compensation and the right of appeal against refusal of a licence. Such a scheme would be expensive as well as cumbersome. A more practical procedure would be to designate areas which have an excessive number of retail pharmacies; in these localities licences could be surrendered voluntarily subject to compensation agreed between the State and the proprietor of the pharmacy.

APPENDIX

PHARMACEUTICAL SERVICES IN OTHER COUNTRIES

NORTHERN IRELAND

Pharmacists practising in Northern Ireland require the same qualifications as those in Great Britain. Prospective pharmacists, up to recently, had the choice of taking a course of study leading to the Pharmaceutical Chemist Qualifying Examination conducted by the Pharmaceutical Society of Northern Ireland or of reading for a degree in pharmacy either at Queen's or a British university. Degree courses are not identical in content but the syllabus of each has to be approved by the Pharmaceutical Society before it is accepted as a qualification for registration as a pharmaceutical chemist. Some schools of pharmacy which are not part of a university offer degrees through the council for National Academic Awards. In future all, or virtually all, pharmaceutical chemists will qualify by means of a university degree. The standard of the Qualifying Examinations of the Society was very close to that of a degree. Having successfully completed his academic studies, the prospective pharmacist must undergo one year of practical training before registration.

Medical prescriptions may only be dispensed by or in the presence of a registered pharmaceutical chemist.

General Medical Services

The National Health Service facilities are available to all residents in the Province. Every resident is registered with a general medical practitioner who enjoys complete clinical freedom

in prescribing. Until July 1968 medicines were dispensed on medical prescriptions without charge. As from that date prescription charges were re-introduced.

Pharmaceutical services, this means the dispensing of medicines prescribed by a doctor, are rendered by chemist contractors, dispensing medical practitioners and hospitals. In 1968 there were 601 contractors who between them operated 650 shops. Only very few contractors have more than one shop. The largest contractor is the Belfast Co-Operative, which has twelve branches, only two others have four and one contractor has three.

Sixty-five doctors in 47 practices were required to dispense for some of their patients who through distance or inadequate public transport would otherwise have had serious difficulty in obtaining medicines from a chemist. The number of patients covered by this arrangement was 63,000. Medicines are also dispensed by hospitals for their in-patients and out-patients.

The total number of prescriptions dispensed in the year ending March 1968 was 10.7m. In the following year, presumably due to the re-introduction of a charge for prescriptions, it decreased by five per cent. The number of prescriptions presented fluctuated widely from month to month and in January was some 45 per cent more than in July. The average number of prescription forms per patient on doctors' prescribing lists was 4.6 in 1967/68 and 4.4 in 1968/69.

The average cost per prescription form was 21/- and per prescription 13/10 in the three months ending March 1969. Approximately half of all persons presenting prescriptions after 1st July 1968 had to pay a fee of 2/6. The remainder belonged to classes exempt from the charges. These included, *inter alia*, all persons under 15 and over 65 years of age, expectant mothers and mothers of a child under one year. The cost to the public purse per prescription, therefore, averaged about 12/6.

Payment to chemist contractors is made up of five components, three of which are in respect of remuneration and two for reimbursement of costs incurred. First of all, there is a professional fee (dispensing fee) which varies from 2/2 to 4/-, for the vast majority of prescriptions it is 2/2. Second, there is an on-cost allowance calculated as a percentage of the basic price of the drugs as set out in the Drug Tariff. This on-cost as from the 1st July

1968 is at the following percentages in respect of prescriptions dispensed by a chemist in a calendar month:

- 30 per cent for each prescription up to 250;
- 25 per cent for each prescription from 251 to 500;
- 17½ per cent for each prescription from 501 to 750;
- 12½ per cent for each prescription from 751 to 1,000;
- 10·07 per cent for the remainder.

The average on-cost in the Province was approximately 17 per cent. The number of prescriptions dispensed was about 1,300 per shop per month. Third, there is a special fee of 7/6 paid for the dispensing of urgent prescriptions outside normal working hours and also an allowance of 0·5d. per prescription to compensate for the additional work due to the re-introduction of prescription charges. In addition, contractors are re-imbursed in respect of the basic price of the drug calculated in accordance with the Drug Tariff, normally the wholesale list price for the size of pack appropriate to the chemist's overall demand. In addition, there is a container allowance of 1·91d. per prescription.

The system of remuneration has changed appreciably over the years. For example prior to 1962 the on-cost was at a flat rate of 25 per cent on net ingredient cost. The present system of rates are almost identical to those operating in Scotland and it is intended that future changes in chemists' remuneration will be reflected in Northern Ireland.

In 1968/69 just over 71 per cent of the amount of payment received by chemists represented the cost of ingredients and containers used in the dispensing of prescriptions. This equals a gross margin of 29 per cent off-cost or 41 per cent on-cost. The gross amount chemists received for dispensing prescriptions was £6·9 m., say an average of about £10,600 per chemist shop. The income they received from dispensing private prescriptions is not known but it is thought to be quite minimal.

Retail pharmaceutical chemists contract with the General Health Services Board to dispense medicines and appliances on doctors' prescriptions. These contractors having dispensed the

prescriptions send the forms to the Board's Pricing Bureau. The Board is responsible for paying the contractors according to the agreed terms. The Board's Pharmaceutical Officer each year visits a number of pharmacies "to inspect the accommodation and equipment and the drugs, medicines and appliances held on the premises". The Board also carries out approximately 100 check tests of drugs and appliances and 92 per cent of the prescriptions tested were satisfactory. In 1967/68, nine complaints against chemists were investigated by the Pharmaceutical Services Committee of the Board and in addition nine cases where the facts were not in dispute were considered by the Board. These included two where no service was provided for a short time due to the absence of a registered pharmaceutical chemist and four where the chemists had temporarily closed their premises without the Board's consent.

TABLE 19: *Number of Prescriptions and Average Gross Cost*

Northern Ireland

1957-1968

	Prescriptions		Average gross cost per prescription		Prescription per head of population
	Millions	Index 1958=100	s. d.	Index 1958=100	
1957	6.8	99	6 9	91	4.9
1958	6.9	100	7 5	100	4.9
1959	7.3	106	7 11	107	5.2
1960	7.2	104	8 5	113	5.1
1961	7.2	104	9 4	126	5.0
1962	6.7	97	10 4	139	4.7
1963	7.0	101	11 0	148	4.8
1964	7.3	106	11 8	157	5.0
1965	9.0	130	11 9	158	6.1
1966	10.2	148	11 9	158	6.9
1967	10.3	149	12 1	163	6.9
1968	10.4	151	13 2	178	6.9

Source: *Government of Northern Ireland, Digest of Statistics*, No. 31, March 1969, Table 41.

1968 *Digest of Statistics*, No. 32, September 1969, Table 41.

In the ten years between 1958 and 1967 the average cost per prescription increased from 7/5 to 12/1, that is by 63 per cent and the number of prescriptions dispensed from 6.9 m. to 10.3 m., that is by virtually one half. During the same period the increase in population was only some six per cent so that virtually the whole of the increase in number of prescriptions is due to an increase in prescriptions per head of the population. The receipts from dispensing prescriptions in this decade thus increased by about 145 per cent.

The amount paid to doctors dispensing for their patients in 1968/69 was £180,000. Dispensing doctors are rewarded either on the same basis as chemists or by a capitation fee (at present 11/-) in respect of each patient for whom they are required to dispense. Doctors paid on this basis are also entitled to additional payment for supplying any drugs or appliances included in a Special List.

It is interesting to note that the cost per patient presenting his prescription at the chemist's shop was £4/16/- while the cost per patient having his medicine dispensed by his doctor was £2/17/- This was noted in the report on Prescribing and Sickness Benefit Costs in Northern Ireland (Pemberton)⁵ and was attributed to dispensing doctors who purchase and stock their own drugs being more cost conscious than their prescribing colleagues and tended to keep a smaller repertoire.

Regional Analysis

There are considerable variations in the nature and cost of pharmaceutical services between the eight local health authority areas. (See Table 20.) The number of prescription forms per person on doctors lists in Armagh (5.4) and Fermanagh (5.2) is much higher than in Belfast (3.9) and Londonderry (4.4). These differences are quite probably due to social factors rather than differences in medical practice. The average cost per prescription also shows some fairly marked variations. In Londonderry county it is 12/3 while in Antrim it is as high as 14/5. These two factors contribute to differences in the cost of pharmaceutical services per person on doctors' lists which in Londonderry County is

⁵D2.

TABLE 20: *Pharmaceutical Statistics—Northern Ireland 1968/69.*

	<i>Persons on doctors' lists 000's</i>	<i>Number of pharmacies</i>	<i>Gross cost per prescription</i>	<i>Forms per person on doctors' lists</i>	<i>Cost per person on doctors' lists</i>	<i>Gross income from prescription per pharmacy</i>	<i>Number of people on doctors' lists per pharmacy</i>
Belfast	518	244	13/6	3·9	£4/5/-	9,023	2,123
Antrim	259	106	14/5	4·7	£5/-/-	12,215	2,443
Armagh	115	50	12/10	5·4	£5/6/-	12,190	2,300
Down	241	113	14/2	4·9	£5/6/-	11,305	2,133
Fermanagh	40	20	12/10	5·2	£4/17/-	9,700	2,000
L'Derry C.B.	76	28	13/-	4·4	£4/15/-	12,892	2,714
L'Derry Co.	101	38	12/3	4·4	£3/15/-	9,968	2,658
Tyrone	140	64	13/7	4·5	£4/14/-	10,284	2,188
Total	1,490	663	13/7	4·4	£4/13/-	10,444	2,246

Source: Number of Pharmacies—*Register 1969*, Pharmaceutical Society of Northern Ireland.

All others—Payment made to Chemists and Appliance Suppliers computed monthly by the Northern Ireland General Health Services Board.

£3/15/- and in the counties of Armagh and Down is £5/6/-, that means that the cost per person in Armagh and Down is more than 41 per cent per person higher than in Londonderry County. The average income from National Health Service prescriptions per pharmacy is £10,444. It is highest in Londonderry County Borough at £12,892 and lowest in Belfast at £9,023. The number of persons per pharmacy is highest in Londonderry County and Borough and lowest in Fermanagh.

Hospital Pharmacies

Total expenditure on pharmacy including cost of ingredients, salaries and wages incurred by hospitals under the National Health Service in 1966/67 was £1.2m. for in-patients and £101,000 for out-patients. The figure relating to out-patients is not very meaningful as it is the practice for consultants to make recommendations to the patients' general practitioners who then prescribe for them. It is only a minority of out-patients who receive their medicines from the hospital pharmacy. Pharmaceutical services account for approximately six per cent of aggregate hospital net running cost. The average expenditure per in-patient week was £1/11/8 but this fluctuated widely according to the nature of the hospital and of course the nature of the disease. In the principal teaching hospital the cost was as much as £5/2/11 while in Special Care hospitals it was as low as 3/-. There was also a tendency for the cost of pharmaceutical services to be lower in the smaller than the larger hospitals.

Retail Pharmacy

The publication of the Report on the Census of Distribution and Other Services of Northern Ireland, 1965,⁶ in April 1969, makes it possible to give some additional information on retail pharmacies. In the Census, pharmacies are included in a category "chemist and photographic wares". This includes all pharmacies proper and a number of shops which sell photographic wares without being pharmacies.

The total turnover of chemist and photographic goods shops in 1965 was recorded as £9.8 m. In that year payment by the

⁶H1.

General Health Services Board to chemist contractors was about £5 m. It thus appears that approximately one half of the turnover of this group of shops was accounted for by National Health Service prescriptions. The total number of shops was 713. Well over half of these had a turnover of between £10,000 and £20,000. Some 111 had a larger and 218 a smaller turnover than this. (See Table 21.) Just under one third of the total turnover was in shops with annual sales of more than £20,000.

The Pemberton report analyses the 658 chemist contractors of the General Health Services Board by the number of prescriptions they dispense. In 1966, a mere six per cent had a prescription turnover of less than £3,600, i.e. £72 per week. (See Table 22.) One third had a turnover of between £3,600 and £7,200 and another third of between £7,200 and £10,800. Thus 28 per cent had a turnover from prescriptions of more than £10,800, i.e. £216 per week.⁷

Most retail pharmacies are rather small. The average number of people including the registered pharmacist working in a shop is between three and four. (See Table 23.) Some 406 establishments have three staff or fewer and only 35 have seven or more.

The Pemberton Report in 1969 expressed concern about the proliferation of small pharmacies and was impressed by the fact that all chemists' organisations giving evidence were in agreement that the number of pharmacies in Northern Ireland is greatly in excess of that necessary to provide an adequate pharmaceutical service. The Committee recommended that the Minister should consider the desirability of a statutory limitation on the unrestricted right of entry of registered pharmaceutical chemists to the Board's Pharmaceutical list.

The total wages and salaries bill of chemist and photographic goods shops in 1965 was £737,000—equivalent to 7½ per cent of total turnover. Average wages would not be a meaningful figure as the salary of a qualified manager is of course much higher than that of an unqualified assistant. The proportion of wages and salaries to turnover in the Belfast County Borough is 8½ per cent and this means that in the rural areas of the Province the proportion must be less.

⁷D2, para. 147 and 148.

TABLE 21: *Turnover of Chemist and Photographic Goods Shops Northern Ireland 1965.*

	Turnover		Establishments		Turnover	
	£		Number	%	£,000's	%
Under 1,000		8	1		5	—
1,000—		10	1		15	—
2,000—		30	4		106	1
5,000—		170	24		1,323	14
10,000—		384	54		5,276	54
20,000—		105	15		2,675	27
Over 50,000		6	1		430	4
Total		713	100		9,830	100

Source: *Report on the Census of Distribution and Other Services of Northern Ireland, 1965.*

TABLE 22: *Distribution of Chemist Establishments by Income from Prescriptions Dispensed Northern Ireland 1966.*

Prescriptions Dispensed		Income from Prescriptions		Establishments	
Number		£'s	Number	%	
Under 6,000		Under 3,600	39	6	
6,000—		3,600—	217	33	
12,000—		7,200—	217	33	
18,000—		10,800—	109	17	
24,000—		14,400—	49	7	
30,000—		18,000—	20	3	
36,000—		21,600—	3	} 1	
Over 42,000		Over 25,200	4		
Total			658	100	

Source: *Prescribing and Sickness Benefit Costs in Northern Ireland, Report of a Health Advisory Committee, May 1969 (Cmnd. 528) Table 11.* Income from prescriptions calculated on the basis that the average cost per prescription is 12/-.

TABLE 23: *Persons Engaged in Chemist and Photographic Goods Shops
Northern Ireland 1965.*

	<i>Number of Establishments</i>	<i>Numbers Engaged</i>
Establishments with 0-1 persons engaged	49	49
2 " "	153	306
3 " "	204	612
4 " "	164	656
5-6 " "	108	590
7-9 " "	25	194
10 or more "	10	120
Total	713	2,527

Source: Report on the Census of Distribution and Other Services of Northern Ireland, 1965.

DENMARK

Education

A pharmacist in Denmark is required to have followed a five-year course of studies and passed the graduate examination of the the School of Pharmacy. Any person who has passed the University Matriculation Examination (science stream) may enrol as a pharmaceutical student. The student begins his studies by spending two years as an apprentice in a pharmacy, but to be appointed an apprentice he must obtain permission from the Board of Education for Student-Apprentices. This Board approves the pharmacies licensed to take apprentices and selects the applicants for vacant apprenticeships according to their examination results.

The apprentice must serve in the dispensary for at least three and in the laboratory for at least six months. During this time he is expected to maintain, without any formal tuition, his knowledge of chemistry, physics, mathematics and natural history.

After the first six months of apprenticeship, which are probationary, the pharmacist is asked to judge the apprentice's suitability for pharmaceutical studies. The apprentice examination is taken at the end of two years and must be passed before entering the second part of the course. This, after three years of study, leads to the graduate examination in pharmacy. The course covers

both theoretical and practical science subjects. On passing the final examination the graduate is competent to be employed in any Danish pharmacy and may apply for a licence entitling him to own a pharmacy. There are many applicants for licences and it is rare for one to be granted to anybody who has not reached his 40's. Recruitment of pharmaceutical students is regulated by the Ministry of Home Affairs. In the early 1960's about 150 were admitted annually, the majority being women.

There is a grade of pharmaceutical auxiliary in Denmark called technical assistant. They follow a course of study similar to that of an apprentice, but restricted to practical subjects. A student apprentice may, if he passes his examination, discontinue his studies and serve as a technical assistant, and a technical assistant, if he sits a supplementary examination in chemistry and Latin, may enter the course leading to the graduate examination in pharmacy. To be enrolled for training as an assistant, which lasts three or four years, depending on the extent of previous education, a person must have passed the secondary school examination or the equivalent.

Numbers and Distribution

In Denmark, there are four broad areas in which pharmacists operate. First, as dispensing pharmacists who work either in retail or hospital pharmacies. In 1960 some 1,084 pharmacists, a considerable number part-time, were employed in 355 pharmacies. The number of pharmacists working full-time was equivalent to 1,000 (including 645 professionally qualified assistants). Eighty-three of these 355 pharmacies were situated in Copenhagen, 145 in provincial towns and 127 in rural areas. The average population per pharmacy was 13,000, but this varied widely:

<i>Population covered</i>	<i>Number of Pharmacies</i>
Less than 5,000	13
5,000—7,000	39
7,000—9,000	49
10,000—14,000	129
14,000—20,000	87
More than 20,000	36
Not known	2

A report on pharmaceutical services published in 1965 states that the most appropriate population per pharmacy is 14,000.

The average in the mid-1960's was the same as it had been at the beginning of the century; it had been rather lower in the 1920's and 1930's. However, during these 60 odd years, the population per pharmacy has increased in urban areas while that in rural areas has declined substantially. In the mid-1960's the population per pharmacy in the towns was rather more than 14,000 but it was less than 10,000 in rural areas.

Due to the large amount of compounding undertaken in pharmacies, the Pharmacy Act lays down that apart from the licensed pharmacist, at least one other member of the staff must be a professionally qualified pharmacist.

Hospital dispensaries, which are subject to the same controls as retail pharmacies, are attached to some of the bigger hospitals. There are twelve such pharmacies and they supply about half the requirements of all hospitals. Retail shops supply those hospitals which have no pharmacies of their own.

The other three fields in which pharmacists operate are industry, the public services (local government and the ministries), education and research.

The two pharmacists in each pharmacy are aided by technical assistants and other supporting personnel. The auxiliaries are not allowed to dispense prescriptions, but are able to undertake some of the routine work for the pharmacist and thereby reduce the need for more expensive fully qualified staff. The trend towards the increased use of auxiliaries is shown by the fact that their number in 1969 was 504, a rise of 60 per cent over the previous three years.

Professional Associations

Danish pharmacists are organised into two groups. The 355 licensed pharmacists or owners belong to an employers' organisation "Danmarks Apotekerforening" and the employees are organised in the Danish Association of Pharmacists which has a total membership of about 2,000.

The purpose of the Association is to safeguard the professional and social interests of its members and to benefit the pharma-

ceutical profession and its development. It establishes employment and salary agreements for the majority of its members, but not for pharmacists in industry. Employment conditions for pharmacists in retail establishments are laid down in an agreement with the employers' organisation and are binding on both parties. According to the scales agreed upon in January 1969, a qualified pharmacist starts at a salary of approximately £1,900 and this increases biannually to twice that amount when he reaches the maximum after 22 years employment.⁸ Pharmacists in industry usually receive higher salaries but they are debarred from obtaining a licence as a dispensing chemist. Salary agreements are negotiated every two years for two years and are on an incremental scale.

Provision exists whereby a member of the Association can be called before a disciplinary committee if he breaks the rules, but this measure is seldom invoked.

Retail Pharmacy

In Denmark, the pharmaceutical system comes under the Ministry of Home Affairs and is administered in accordance with the provision of the Pharmacy Act, 1954. A pharmacist can keep open shop for the sale of medicines only under a Royal resolution on the recommendation of the Ministry of Home Affairs.

To own a pharmacy a person must have a Royal licence which he receives only if he has passed the Danish graduate examination in pharmacy, has had sufficient practical training as a managing or assisting pharmacist and is below the age of 50.

There is a compulsory retirement age for all qualified pharmacists, for licensed owners it is 70 years and for employees it is 67 years. Both are entitled to a pension under a scheme which is the same for employers and employees. This provides also for children's, widows' and invalidity pensions. The scheme is financed partly by contributions to the fund by all covered and partly by the pharmacy tax, which is based on turnover and net profit.

The National Health Board is a professional body which organizes the administration of the pharmacy system on behalf of

⁸H5, page 424.

the Ministry of Home Affairs. The Pharmacy Act, 1954, decrees that "any pharmacy shall be able to manufacture medicines". The layout and equipment of the pharmacies are determined by rules laid down by the Board. Unlike most other countries many medicines in Denmark are compounded in the pharmacy. All medicines produced in pharmacies are sold at prices laid down in an official tariff. This tariff is binding and is set by a board established under the provisions of the Pharmacy Act. The government is represented on the Board and this facilitates the effective control of the price of medicines to the public. This control is effective where medicines compounded in the pharmacy compete with medicines sold by pharmaceutical manufacturers.

The National Health Board has the right to bar a pharmacist from practising on account of physical or mental failings or violation of its regulations.

Each pharmacy is visited at least once a year by an Inspector of Pharmacy and by the local Medical Officer. This is to ensure adherence to all regulations regarding premises, equipment and staff.

Under the Pharmacy Act the Danish pharmacies had a monopoly of the sale of medicines. Some years ago, however, their monopoly of the sale of certain drugs was taken away and these can now be bought elsewhere.⁹ Most medicines sold without prescription are compounded in the pharmacy but an appreciable proportion of medicines dispensed on prescription are bought from manufacturers. The sophisticated drugs bought from manufacturers are on average more expensive than the basic medicines compounded in the pharmacy.

All drugs in certain rural areas may be issued by physicians. In 1961, 246 doctors were permitted to do so. There were also about 800 other stores supplying medicines the sale of which was not restricted by law to pharmacies.¹⁰

Pharmacies are subject to a system of special taxes. These are fairly heavy and in the early 1960's were equivalent to about the total net profits earned. The fiscal imposition takes three forms; a basic tax on each pharmacy, a tax on gross turnover and a tax on net profits after deduction of basic tax and turnover tax. The

⁹H6, page 656.

¹⁰H7, page 59.

tax on net profits is graduated and is levied only on profits above a certain exemption level.

All pharmacies irrespective of size are allowed certain tax concessions. This is to assist those pharmacies which earn the lowest profits. Turnover derived from the sale of certain drugs, e.g. insulin, is exempt from tax because these drugs are sold at a very low profit rate. Tax relief may also be obtained if the rent is very high or if heavy expenditure is incurred in reconstructing a pharmacy.

The revenue obtained from taxes on pharmacies is allocated to three purposes. First, it pays for the cost of administering the system by which retail pharmacies are licensed, controlled and inspected. Second, it provides funds for the pharmacists' pension scheme. Third, it makes grants to pharmacies which have such low sales that their licensed owners do not succeed in earning a minimum income which is laid down in regulations.

Insurance Funds

In Denmark, virtually the whole population are members of either the "A" or the "B" division of the national health insurance scheme. The level of income determines to which division a person has to belong. Heads of families having incomes of less than 42,000 Danish Kroner (£2,300) or single persons with incomes of less than 31,700 Danish Kroner (£1,700) are in division "A" and those having higher incomes are in division "B". For members of both divisions the cost of medicine prescribed by a doctor is subsidized.

Three formulae incorporated into the insurance scheme determine the proportion of the price of a drug which has to be borne by the member, the insurance fund and the State. The formula which applies to a particular purchase is determined by the nature of the illness and the type of drug prescribed.

When formula one or two apply the member pays one quarter of the price of the drug and the insurance fund three-quarters. In the case of formula one the whole of the expenditure of the insurance fund is reimbursed by the State but for formula two only a proportion of expenditure is borne by the State. For drugs covered by formula three the insurance fund may, at its discretion,

refund to the member three-quarters of the price; the fund in its turn will be reimbursed by the State only if the doctor certifies that the patient is suffering from a severe and long-term illness which demands the use of those drugs. If this is the case the doctor must indicate that the prescribed drugs fall under formula three.¹¹ Drugs under this category contain three main groups: (1) sleeping pills, (2) pain relievers and (3) drugs for skin infections, internal and external.

Between 1957 and 1967, the cost of drugs prescribed per head of the population rose from 24.4 Danish Kroner to 74.0 Danish Kroner per year (£1/5/- to £3/16/-). This trebling in cost is explained by two factors. The number of prescriptions dispensed per head of the population increased from 4.5 to 5.6, that means by almost a quarter. The cost per prescription during the same period rose from 5.4 Danish Kroner to 13.1 Danish Kroner (5/6 to 13/6), that means by 140 per cent or nearly one and a half times. (See Table 24.)

During this decade the cost per prescription compounded in the pharmacy increased by 120 per cent from 3.5 to 7.7 Danish Kroner (3/8 to 7/10) and the cost per prescription of proprietary drugs manufactured by the pharmaceutical industry rose by almost the same proportion, from 7.1 to 15.8 Danish Kroner (7/3 to 16/3). In this period the aggregate number of prescriptions compounded in pharmacies declined slightly (from 9.9 to 9.1 millions) while the proprietary drugs dispensed increased steadily (from 10.5 to 18.0 million). This resulted in the proportion of all prescriptions compounded in pharmacies declining from about one half to about one third. However, even in 1967, of the 5.6 prescriptions per head of the population dispensed about 1.9 were compounded in pharmacies.

CANADA

Education

To become a registered pharmacist a person must have a degree in pharmacy and have spent a specific time in practical training.

¹¹H8.

TABLE 24: Cost of Prescriptions in Denmark 1957-1967.

Prescriptions											
Compounded by Retail Pharmacies			Manufactured by the Pharmaceutical Industry			Total			Prescriptions Per head No.	Cost per prescription per head D.Kr.	
No.	Value	Cost per prescription	No.	Value	Cost per prescription	No.	Value	Cost per prescription			
m.	D.Kr.m	D.Kr.	m.	D.Kr.m	D.Kr.	m.	D.Kr.				
1957	9.9	3.5	3.5	10.5	7.5	7.1	20.4	110	5.4	4.5	24.4
1958	10.0	3.5	3.5	10.5	8.5	8.1	20.5	120	5.9	4.6	26.6
1959	10.0	4.5	4.5	11.5	9.0	7.8	21.5	135	6.3	4.8	30.0
1960	9.9	4.5	4.5	12.0	9.5	7.9	21.9	140	6.4	4.8	30.4
1961	9.5	4.5	4.7	12.5	11.0	8.8	22.0	155	7.0	4.8	33.7
1962	9.2	4.5	4.8	13.0	13.0	10.0	22.2	175	7.9	4.8	38.0
1963	9.0	4.5	5.0	14.0	15.0	10.7	23.0	195	8.5	4.9	41.5
1964	9.2	5.0	5.4	15.5	18.0	11.6	24.7	230	9.3	5.3	48.9
1965	9.2	5.5	6.0	16.2	21.0	13.0	25.4	265	10.4	5.3	55.2
1966	9.0	6.5	7.2	17.3	24.5	14.2	26.3	310	11.8	5.5	64.6
1967	9.1	7.0	7.2	18.0	28.5	15.8	27.1	355	13.1	5.6	74.0

Source: *Farmaceutisk Tidende*, 10th May, 1969, P. 439.

m=millions.

1D. Kr. (Danish Kroner) = 1.025.

In 1927, a two-year course which led to the degree of Bachelor in Pharmacy was instituted in Ontario¹² but until 1944 graduates still had to take the licensing examination of the College of Pharmacy. In 1948, a four-year course was started which leads to the degree of B.Sc. in Pharmacy.

The degree is a combination of theoretical and practical training. The student must acquire practical experience for 12 months. This is divided into three sessions; two three-month periods after the completion of the second year of the course and prior to graduation. These two sessions are called the apprenticeship period, one of which may be served in any of the three fields of pharmacy. For students wishing to practise as retail or hospital pharmacists the latter three months and the six-month period after graduation, called the Internship, must be served in either a retail or hospital pharmacy. Of the 84 graduates from Toronto University in 1968, 60 served their internship in retail pharmacies and 14 in hospital pharmacies. The remaining ten graduates entered either research or industry or went on to study for higher degrees. During each training session the student must submit two reports to the College of Pharmacy on the experience gained in the particular field. A graduate who wishes to become registered in the province of Ontario must attain his practical experience within the province. The amount of time spent on practical training in the different provinces varies from one to twelve months.

As the internship is primarily a training period the intern works under the supervision of a pharmacist. Those who accept interns are called preceptors, they are registered by and have their pharmacies examined by the College of Pharmacy. Preceptors are obliged by the College to attend annual training conferences. The interns follow a planned programme and the college tutors supervise the practical training.

When a graduate qualifies as a licensed pharmacist he may practise in any speciality but immediately after registration he is strongly advised to practise in the field of his internship.

There are eight schools of pharmacy in Canada which offer a degree course in pharmacy. In 1968, the total number of

¹²Special reference is made to Ontario; though differences exist between the provinces the basic structure is the same.

undergraduates was 1,855. Toronto University with 487 students was the largest and Laval with 110 students the smallest school. About 70 per cent of all pharmacy students attend the four major Colleges—Toronto, Montreal, Saskatchewan and Alberta. In 1967, 40 per cent of all students of pharmacy were women and the proportion increased to 43 per cent in 1968. The sex ratio varies between Colleges. In 1969, some 30 per cent of all pharmaceutical students in Montreal were women, while in Alberta the proportion was as high as 60 per cent. Alberta and Manitoba were the only two Colleges with a greater number of women than men. The figures in Table 25 indicate that the failure rate amongst men and women students in 1967/68 was nine per cent in the first year, 11 per cent in the second year and 23 per cent in the third year. In some provinces, prior to registration, graduates from outside that province must resit the final examination.

Students graduating in pharmacy in 1968 numbered 375, a 40 per cent increase since 1962. (See Table 26.) The number of men graduates increased by 28 per cent and the number of women graduates by 68 per cent between these years. The number of undergraduates in this period increased by 21 per cent.

A survey of pharmaceutical students in 1962 gave the estimated average income of the chief wage earner in the student's family.¹³ Sixty-eight per cent of all pharmacy students were from families where the main income was less than \$8,000 per annum, which may be taken as the minimum middle-class income for that year.

In the University of Toronto cost for pharmaceutical students is made up of:—the annual fee of \$490 (£196), incidental fees for men of \$70 (£28) and for women \$45 (£18) per annum, an annual expenditure of \$100 (£40) on books and weekly board and lodging charges of at least \$28 (£11.2) per week. For the Ontario student, expenditure on fees and books over the four years is about \$2,000 (£1,040) and board and lodging very approximately \$4,800 (£1,920). The total cost borne by the student is thus some \$7,400 (£2,960) for the course. For most students this has to be found from their own resources. A

¹³H9, page 29. Table 18.

TABLE 25: *Student Enrolment in Canadian Schools of Pharmacy 1967/68, 1968/69.*

<i>Year</i>	<i>First Year</i>			<i>Second Year</i>			<i>Third Year</i>			<i>Fourth Year</i>			<i>Total</i>		
	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
1967	324	212	536	285	206	491	248	186	434	232	113	345	1089	717	1806
1968	315	276	591	293	196	489	254	185	439	196	140	336	1058	797	1855

Source: Association of Deans of Pharmacy—Analysis of Student Enrolment 1968/69.

number of scholarships and awards are made on academic merit. The extent to which the courses are subsidised out of public funds is not published but certainly is quite large.

TABLE 26: *Pharmacy Degrees Awarded in Canada 1962-1968.*

Year	Men Graduates	Women Graduates	Total number of Graduates	Total number of Undergraduates
1962	187	81	268	1,531
1963	219	77	296	1,640
1967	188	118	306	1,806
1968	239	136	375	1,855

Note: Graduate statistics exclude graduates from Dalhousie—a small College.

Source: Canadian Conference of Pharmaceutical Faculties, 1962, 1964, 1968, 1969.

Numbers and Distribution

The number of licensed pharmacists in 1967 was 10,585, an increase of 15 per cent over the previous four years. Pharmacists working in industry do not need to register and only some provinces require the registration of hospital pharmacists.

Population per licensed pharmacist in 1967 was just under 2,000. This figure has not varied significantly over the last decade. The population per retail pharmacy, however, showed a continual increase from 3,650 in 1958 to 4,211 in 1967. The population per pharmacy varied widely between the provinces. New Brunswick had an average of 5,990 and Saskatchewan 2,969 persons per pharmacy.

The proportion of women licensed pharmacists increased from eight per cent of the total in 1958 to 11 per cent in 1962, though the proportion of women graduating in 1969 was 30 per cent. Pharmacy in Canada is a rather youthful profession. Sixty per cent of all pharmacists—78 per cent of the women and 58 per cent of the men—were under 45 years in 1962.

The three main areas of employment for pharmacists in 1962 were retail stores (85 per cent), hospital pharmacies (6 per cent) and the pharmaceutical industry (7 per cent).

Retail Pharmacy

Legislation concerned with the practice of pharmacy and the handling and sale of drugs falls under provincial jurisdiction. The Acts differ between provinces but all contain the phrase "except as otherwise provided, no one except a pharmaceutical chemist may compound or dispense prescriptions of authorised practitioners or sell or offer for sale or keep open shop for the sale, the compounding or the dispensing of drugs, medicines or poisons." Medical practitioners, dentists and veterinary surgeons are generally exempted from the restrictions of the Act in respect of supplying medicines to their own patients. The Acts specify four groups of drugs:¹⁴

one of which may be sold other than by a registered pharmacist. This includes such drugs as acetylsalicylic acid, castor oil, Epsom's salts, tincture of iodine and the drugs registered under the Proprietary or Patent Medicine Act.

A second one which may be sold only to persons who are known to the registered pharmacist and for which a register of sale is maintained which must be signed by the purchaser. This group of drugs is usually referred to as the Poison Schedule and includes such drugs as carbolic acid, croton oil, strychnine, mercurial salts, methyl alcohol.

A third one which may be sold only on the prescription of a person qualified by provincial law to prescribe drugs, e.g. physicians, dentists or veterinary surgeons. This group of drugs includes those restricted by prescription requirements (Schedule F) under the Food and Drugs Act, as well as other drugs deemed, by the individual provincial licensing bodies, to require a prescription before being dispensed by a registered pharmacist.

A fourth makes up the balance of the pharmaceutical preparations which can only be handled by a registered pharmacist, but in respect of which over-the-counter sale is permitted.

The extent to which professional training can be applied in retail pharmacies depends on the size of the pharmacy, the nature

¹⁴H10, Chapter I, page 27.

of the turnover and the scope for specialization and division of labour. Less than a quarter of the time of 45 per cent of all pharmacists was spent on dispensing prescriptions and 75 per cent spent less than a quarter on the sale of non-prescribed medicines. Fewer than one fifth of all pharmacists spent half or more of their time on dispensing and selling medicines.

In 1967, sales in Canadian pharmacies amounted to \$664m. (£223m.), an increase of 79 per cent over the previous nine years. Pharmacy sales in 1958 represented 2.4 per cent of total retail trade, this had increased to 2.8 per cent by 1967. (Dominion Bureau of Statistics, Bulletin on Retail Trade.)

The Canadian Pharmaceutical Association conducts an annual survey of retail pharmacy for the purpose of enabling pharmacists to compare the operation of their pharmacies with others in their province and the rest of Canada. The 613 pharmacies which reported in 1967 were not a representative sample of all pharmacies. They include as few as two per cent of pharmacies in Quebec and six per cent in Newfoundland whereas almost 30 per cent of New Brunswick and British Columbia pharmacies are included. The total number of pharmacies in 1967 was 4,899 and the figures given in the Report are compiled by grossing the data of the 613 reporting pharmacies, which represents 12.5 per cent of the total. In 1967, total sales, calculated using this method, were \$797m. (£267.4m.). This represents a difference of \$133m. (£44.6m.) or 20 per cent compared with the figures published by the Bulletin on Retail Trade.

Average figures taken from the Report provide useful working ratios but cannot be designated as "averages" of Canadian pharmacies. The average sales of the 613 reporting pharmacies in 1967 was \$164,000 (£55,000), an increase of \$13,000 (£4,000) over the previous year. Almost half of this was due to increased income from dispensing prescriptions. Average sales were highest in British Columbia at \$213,000 (£72,000) and lowest in Saskatchewan at \$125,000 (£42,000). (See Table 27.) Gross margin represented 35 per cent of sales for all reporting pharmacies and did not differ significantly between the provinces. Total expenses including manager's salary and employees' wages were 29 per cent of sales. Net profits in British Columbia were higher in absolute figures, than in Ontario and Saskatchewan, but repre-

sented a smaller proportion of total sales. Proprietors and managers worked from 43 to 55 hours per week, the average being 48 hours. Pharmacies were open for 56 hours per week in Saskatchewan and for as long as 80 hours in Newfoundland.

In 1967, the average price per prescription was \$3.57 (£1.2) including a gross margin of \$1.40 (9/6). The ratio of prescription receipts to total receipts was 29 per cent for all reporting pharmacies. (See Table 28.) Turnover from prescriptions and the cost of dispensing a prescription were affected by the location and ownership of the pharmacy. In chain pharmacies the receipts from prescriptions were 23 per cent and in pharmacies located in medical buildings 63 per cent. Gross margins on dispensing, however, were lowest in chain pharmacies and highest in pharmacies located in medical buildings. In recent years the number of pharmacies charging for prescriptions on the basis of cost plus a professional fee has increased while fewer apply the old method of charging on the basis of cost plus a fixed percentage. In 1967, about three-quarters of the 613 reporting pharmacies used the professional fee method. The corresponding proportion was 43 and 30 per cent in 1966 and 1965 respectively.

Total income from prescriptions was \$234m. (£79m.) in 1967, an increase of 109 per cent over the previous nine years; the volume of prescriptions increased by 62 per cent and average cost by 28 per cent. The number of prescriptions per person was 3.2 in 1967. Expenditure per person on prescribed medicines was \$11.4 (£3.8) in 1967, an increase of \$4.8 or 73 per cent since 1958, while *per capita* personal income increased by \$884 or 58 per cent. The proportion of personal income spent on prescriptions was about 0.5 per cent in both years.

Hospital Pharmacy

The Royal Commission on Health Services 1966 estimated that there was a minimum of 595 pharmacists working in Canadian hospitals in 1962. Only 294 hospitals of a total of 1,332 employed at least one pharmacist.¹⁵ The Report of the Royal Commission 1966 stated that hospitals not employing a pharmacist often have a dispensary under the control of the medical

¹⁵H11.

TABLE 27: *Average Costs and Profits of Pharmacies in Canada, British Columbia, Ontario and Saskatchewan, 1967.*

	Canada		British Columbia		Ontario		Saskatchewan	
	613 Pharmacies		134 Pharmacies		193 Pharmacies		83 Pharmacies	
	\$000's	%	\$000's	%	\$000's	%	\$000's	%
Sales	164	100	213	100	161	100	125	100
Cost of Goods Sold	107	66	140	66	105	66	81	65
Gross Margin	57	35	73	34	55	35	44	35
Expenses*	48	29	62	29	47	29	36	29
Net Profit (Before Taxes)	9	6	10	5	8	5	8	6
Other Income	1	—	2	—	—	—	1	—
Proprietor's or Manager's Salary	12	—	13	—	13	—	11	—
Total Income (Before Taxes)	22	—	26	—	22	—	20	—
Value of Merchandise Stock	29	—	35	—	29	—	27	—

*Expenses include proprietor's or manager's salary and employees' wages.

Note: Due to rounding off, figures may not add up to stated totals.

Source: 26th Canadian Pharmaceutical Association Annual Survey of Retail Pharmacy 1967, Tables 1 and 2.

TABLE 28: *Statistics Relating to Pharmacy in Canada, British Columbia, Ontario and Saskatchewan, 1967.*

	<i>Canada</i> 613 Pharmacies	<i>British Columbia</i> 134 Pharmacies	<i>Ontario</i> 193 Pharmacies	<i>Saskatchewan</i> 83 Pharmacies
Annual Rate of Turnover in \$000's	3.7	4.0	3.8	3.2
Average Price per Rx in \$'s	3.57	3.43	3.64	3.58
Average number of Rx in 000's	14	15	14	13
Average receipts from Rx in \$000's	49	50	51	45
Ratio of Rx Receipts to Total Receipts	29	22	31	34
Hours per week pharmacy was open	65	73	66	56
Hours per week worked by proprietor	48	45	50	52

Note: 1. Rx=prescription.

2. Currency exchange rate: £1=\$2.98 prior to 20th November, 1967.

Source: 26th Canadian Pharmaceutical Association (C.Ph.A.) *Annual Survey of Retail Pharmacy 1967*, Tables 1 and 2.

director or another member of the medical staff. In 1962, the average hospital pharmacy employed just over two pharmacists and dispensed 57,600 prescriptions a year. In the average working week of 39 hours a hospital pharmacist dispensed approximately 13 prescriptions per hour and almost 50 per cent devoted over half of their total working time to dispensing.

Salary scales for hospital pharmacists vary between hospitals. The following is thought to be not untypical for the different grades:

Director Pharmacist	\$10,000-\$12,000 p.a.
Assistant Director Pharmacist	\$8,500-\$10,000 p.a.
Staff Pharmacist	\$7,500-\$9,000 p.a.
Pharmaceutical Technician	\$4,080-\$4,730 p.a.

Clinical pharmacy, where the pharmacist accompanies the doctor on his rounds and discusses medication with him, has not as yet been introduced in Canadian Hospitals. Experiments in the United States were quoted as being successful.

Department of Health, Ontario

In the province of Ontario medicines are supplied to all mental and tuberculosis hospitals free by the Department of Health. The Department also supplies biologicals free to all physicians practising in the province. Patients on welfare receive free medicines through the Department of Social Welfare which is reimbursed at a rate of 80 per cent by the Department of Health. Some medicines, such as insulin, are supplied directly to welfare patients by the Department of Health. The total cost of medicines issued by the Department in 1968/69 was approximately \$3½ m. (£1.4m.).

Medicines issued by the Department of Health are distributed from a Central Pharmacy which serves the whole province. The Central Pharmacy purchases its medicines direct from the manufacturers. Tenders are issued monthly and all medicines are quality tested prior to acceptance. Incoming medicines from accepted manufacturers are again tested by the laboratories at

the Central Pharmacy and in the case of default may be rejected. An average of 10 per cent of all medicines received are rejected because of failure to meet specifications. The estimated saving by purchasing medicines in this way, as opposed to each hospital purchasing independently, was estimated to be 40-50 per cent.

The Central Pharmacy has a staff of ten—five qualified pharmacists and five technicians. The operating costs of the Central Pharmacy were \$100,000 (£40,000) in 1968/69. General Hospitals purchase medicines from wholesale firms, but the Department of Health subsidizes expenditure on a formula basis if the cost per patient does not exceed \$2.8 per day.

Drug Pricing Programme in Ontario

The Ontario government has established a Drug and Biological Service for the purpose of halting the rising expenditure on drugs and to devise a scheme of control which can be applied in a free-market economy. The method which the Service has devised will come into operation in January 1970 and will affect drug manufacturers, retail pharmacists, physicians, the health services and the patient.

In the first instance the scheme will apply only to a number of more commonly used drugs, e.g. tranquilizers, antibiotics. Should the scheme succeed, all prescribed drugs will eventually be covered. Every manufacturer of these products was visited by a committee appointed by the Department of Health and their premises, equipment and production process were examined. Each product was quality tested at the Central Pharmacy and only manufacturers whose products reached the required standard were accepted for participation in the scheme. For every drug a price was negotiated with each manufacturer. The price could not be increased for a period of six months. Some manufacturers were reticent in co-operating but finally did so when faced with the alternative of not being included in the scheme. A list of drugs, names of manufacturers and negotiated prices was compiled as shown in Figure 1. All chosen drugs are tabulated and published in book form to be circulated to all doctors, pharmacists and manufacturers.

FIGURE 1: *Negotiated Prices with Manufacturers Producing Meprobamate.*

	<i>Manufacturer</i>	<i>Listed Price per 20mgm.</i>
Meprobamate	A	\$5.40
"	B	\$4.80
"	C	\$4.00
"	D	\$3.50
"	E	\$2.75
"	F	\$1.90
"	G	\$1.75

Note: This shows the proposed design for the Controlled Drug Index Book. Names of manufacturers will be published in the tables.

Each practising physician in Ontario will receive the C.D.I. (Controlled Drug Index) Book from the Department of Health. The advantage to the doctor is that rather than having to ascertain the quality of the drug he is prescribing from the numerous brand names available on the market, he is assured by the Department of the quality of all drugs listed in the book and merely uses the letters C.D.I. on the prescription form.

Pharmacists will have a sign on their premises indicating their participation in the scheme. At present there is no generally agreed method of charging for dispensing prescriptions. Percentage mark-ups on prescriptions vary from 30 to 80 per cent. The Department and the Canadian Pharmaceutical Association have agreed on a prescription fee of \$1.95 (15s. 7d.) on all prescriptions dispensed under the new scheme. When the pharmacist receives a C.D.I. (Controlled Drug Index) prescription he decides which brand name to dispense. Assuming the ascertained quality of the drug and the desire to maximize profits he is likely to choose one of the lower priced medicines listed as this will give him a larger percentage profit, under the agreement where the fee is unrelated to the cost of the drug. It also means that if the scheme is successful, pharmacists will be able to reduce the variety of drugs they supply and thereby reduce costs.

The purpose of the scheme is partly to safeguard the public against over-costly drugs and to assure them of the quality of the drugs dispensed. Under this scheme the public will be assured of control over both quality and price.

BIBLIOGRAPHY

Introduction

- A1 *Dental Services in Ireland*, P. R. Kaim-Caudle, Broadsheet 1, 1969, The Economic and Social Research Institute, Dublin.

Chapter II.

- B1 "The Pharmacist as a Consultant on Drugs," *Official Journal of the Irish Pharmaceutical Association*, September 1966, Vol. 2, No. 3.
- B2 *The Drugs You Take*, S. Bradshaw M.B., Ch.B., Pan Books Ltd. 1968.

Chapter III.

- C1 "Drug Control in Ireland," J. G. Coleman, in *Adolescent Drug Dependence*, edited by C. W. M. Wilson, Pergamon Press, London 1968.
- C2 "The Cashman Report," *Official Journal of the Irish Pharmaceutical Association*, Autumn 1968, Vol. 4, No. 3.
- C3 Memorandum from Professor R. F. Timoney, 9th January, 1970.
- C4 Letter from Professor R. F. Timoney, 18th March, 1970.
- C5 *The Calendar of the Pharmaceutical Society of Ireland*, 1967, Vol. XL.
- C6 *Census of Distribution 1966*, Government Publication Office, Dublin (Pr. 619).

Chapter IV.

- D1 "Health Bill, 1969," Second Stage, Parliamentary Debates, Vol. 239, No. 10.
- D2 *Prescribing and Sickness Benefit Costs in Northern Ireland*, Report of a Health Advisory Committee, May 1969. (The Pemberton Report) H.M.S.O. (Cmd. 528).
- D3 Information from the Central Pharmacy, Dublin Health Authority, 26th October, 1969.
- D4 *Statistics for Participating Voluntary Hospitals*, 1967, Hospitals Commission, Dublin.
- D5 *Household Budget Inquiry 1965/66*, Government Publications Office, Dublin (Pr. 266).
- D6 United States National Center for Health Statistics, Series 10, No. 27.

- D7 *Without Prescription*, July 1968, Publication No. 27, Office of Health Economics, 162 Regent Street, London W1.
- D8 *Census of Distribution*, 1956, Central Statistics Office, Dublin.
- D9 *Census of Population, Vol. 1*, 1956, Central Statistics Office, Dublin.
- D10 *Census of Population, Vol. 1*, 1966, Central Statistics Office, Dublin.

Chapter VI.

- E1 *Commission on Higher Education, 1960-1967, Report II, Vol. 1*, (Pr 9389).
- E2 *The Hospital Pharmaceutical Service in Scotland*, (The Grosset Report), Scottish Home and Health Department, H.M.S.O.
- E3 *The Fair Trade Commission, Report of Enquiry*, Government Publication Office, Dublin (Pr 3926).
- E4 United States National Center for Health Statistics, Series 10, No. 39.
- E5 *The Health and Beauty Aids Study*, Institute of Food Distribution, 10/12 Cork Street, London W1, 1969.
- E6 "Drug Safety," D. A. Cahal M.D., *Journal of the Irish Medical Association*, Supplement No. 1, October 1968.
- E7 *Extra Pharmacopoeia*, W. Martindale, published by direction of the Pharmaceutical Society of Great Britain.
- E8 *Adolescent Drug Dependence*, edited by C. W. M. Wilson, Pergamon Press, London, 1968.
- E9 "Which", *Journal of the Consumers' Association*, October 1967, 14 Buckingham Street, London WC2.
- E10 *The Lancet*, 24th July, 1967.
- E11 "Drugs: Their Development, Use and Control," Proceedings of a symposium held at Trinity College, Dublin, *Journal of the Irish Medical Association*, Supplement No. 1, 1968.
- E12 *Home Medication Survey: National Opinion Polls Ltd. (for Aspro-Nicholas Products Ltd.)*, 1965.
- E13 *Monthly Index of Medical Specialities (M.I.M.S.)*, Vol. 11, No. 8, August 1969.
- E14 *Index List*, The Irish Drug Association, April 1969.
- E15 "Health Education and the Pharmacist," S. Bradshaw M.B., Ch.B., in *the Pharmaceutical Journal*, 15th June, 1968.

Chapter VII.

- F1 *The Health Services and Their Future Development*, 1966 (White Paper), Government Publication Office, Dublin (Pr. 8653).
- F2 "The Economic Future of Pharmacists," George Teeling-Smith, *Pharmaceutical Journal*, 1964.

Chapter VIII.

- G1 *Medicine in the 1990's*, Office of Health Economics, October 1969.
- G2 *The Third Programme, Economic and Social Development, 1969-1972*, Government Publication Office, Dublin (Pr. 431).

APPENDIX

- H1 *Report of the Census of Distribution and Other Services of Northern Ireland*, 1965, H.M.S.O. 1969.
- H2 *Register for 1969*, The Pharmaceutical Society of Northern Ireland.
- H3 *Twentieth and Twenty-First Annual Reports*, (Northern Ireland), 1967/68 and 1968/69.
- H4 *Digest of Statistics* (Northern Ireland) No. 29, March 1968, H.M.S.O.
- H5 *Farmaceutisk Tidende*, 10th May, 1969.
- H6 *Farmaceutisk Tidende*, 27th August, 1960.
- H7 *Social Welfare in Denmark*, Orla Jensen.
- H8 *Farmaceutisk Tidende*, 27th April, 1968.
- H9 *Pharmacist Manpower in Canada*, 1962, Royal Commission on Health Services, published 1967.
- H10 *Provision, Distribution and Costs of Drugs in Canada*, Department of National Health and Welfare 1964, Royal Commission on Health Services.
- H11 Brief of the Canadian Society of Hospital Pharmacists to the Royal Commission on Health Services.

