THE CURRENT STRENGTH OF THE PROFESSION

Background and survey technique

A LTHOUGH THERE have been l_{\langle} several studies which have looked JL A-at manpower in recent years, none has sought to re-establish the fulltime equivalents put forward 17 years ago by Alpine (1970) for the mid-1969 General Optical Council Register. These figures assess how an optometrist's commitment to professional work varies as a function of their age and sex and permit the calculation of the effective strength of the profession. Since that time, chemist opticians have almost disappeared, receptionists have

Chris French lectures at the Ophthalmic Optics Department of the University of Manchester Institute of Science and Technology. become the norm and women optometrists have become an increasingly important component of the professional workforce.

Women at work

The last 20 years or so has been a period of major economic and social change, with a substantial rise in women's participation in employment in this and other countries. Summarising the position in Great Britain, Martin and Roberts (1984) report that by 1980, women constituted approximately 40 per cent of the total labour force and 10 million women were economically active. In the sample of women in their survey they reported. '60 per cent were working in a paid job. 5 per cent were unemployed, 5 per cent were students and 30 per cent were out of the market. ... By contrast, most of the husbands (92 per cent) were working.' Although great play is often made of the proportion of women working in the UK compared with other countries, according to Mallier and Rosser (1986) the US economy has assimilated far more women than the British. As the UK future is often seen in current US changes this may suggest that the trend will continue further in the United Kingdom than it has so far.

continued on page 36

STRENGTH OF THE PROFESSION

continued from page 35

Martin and Roberts (1984) identified an increasing tendency towards women remaining in the labour market. The oldest women in their sample had spent about 60 per cent of their total working life in employment but younger women had spent proportionally more. For example, women in their early thirties had worked on average 66 per cent of their working lives. This was made possible largely by part-time working. Few working women with a young child work full time, although the proportion of full-time working increases with older women. The proportion of women in part-time working is higher in Britain than the US (Mallier and Rosser, 1986).

Martin and Roberts' study involved interviews of 5,500 women between the ages of 16 and 59. Women with the highest level qualifications ('A' levels or above) were most likely to return to work within six months of their first birth. Dex (1984) examined the factors affecting the duration of time before women return to work in more detail. Unfortunately, the number of 'professional' women was still too small for specific conclusions to be drawn on this group. Teachers showed a high tendency to return to work within six months (22 per cent) but so did some other less-qualified groups.

Joshi (1984) commenting on a further analysis of the same data reports that the typical effect of child-bearing is to interrupt rather than terminate women's working lives and this often involves lower hourly pay and lower occupational status. Women in some jobs are obliged to change their occupations on return.

Women in the professions are in a slightly different position. Where the profession offers good opportunities for part-time work there will be no need to change occupation, but positions held tend to be of lower status and there have been reports of employment discrimination by male colleagues. Dentistry in this country now has a degree of over-manning.

Although the problem is described as one of 'underemployment' in some quarters rather than 'unemployment', a 1985 survey found that 20 per cent of women (Seward and McEwen, 1987) reported difficulty in finding employ-

ment with consequent periods of unemployment. On occasions men were given interviews for which women had been told the job was filled.

In optometry, part-time locum work may be considered by some to be of lower status and there are fewer women in management positions in corporate bodies and fewer women are partners or own their own practices, but locum work is still perhaps relatively well paid. Unemployment apparently does not exist, although there is debate over how fully employed some ophthalmic opticians are along with the nature of some advertised vacancies. If a woman returns quickly to part-time working after the birth of her child there is little need for retraining over and above that which might be required by any professional from time to time throughout their career. All in all with the opportunities for part-time work, one might expect employment amongst women OOs to be as high or higher than any other occupational group. Thus one would expect the 1980 DE/OPCS Women in Employment Survey to underestimate the employment activity of women optometrists. However, one cannot completely pre-judge the issue, because there are other imponderables. For example, it is reasonable to expect that women OOs will show a greater tendency to be married to other professionals and it is conceivable that this itself will generate unique pressures.

The professions are traditionally male preserves. Even as late as 1964, only one in four of new graduates in optometry was a woman (French and Loran, 1983). In 1988 it is to be expected that 60 per cent of home graduates will be women. Similar trends have been observed in accountancy, dentistry, medicine, pharmacy and veterinary science.

The current interest in the professions involving a university degree amongst women is apparent from an examination of the annual statistics published by the Universities Central Council on Admissions. Forty-three per cent of home entrants to university courses are now women (UCC A, 1986). The Department of Education and Science's 1986 paper on the projection of demand for higher education up to

the year 2000 suggests in one of its projections a faster rise in participation in higher education amongst women than men with a further narrowing in the gap between the sexes.'... within education girls overtook boys in their "0" level attainments in the early 1970s and by the mid-1980s had almost reached parity in the proportions gaining two or more "A" levels. Policies to encourage more women to study science and technology may also provide more opportunities for them. At present there is a gross underrepresentation of women studying these subjects in higher education.' This DES paper projects that by the year 2000 between 46 per cent (projection P) and 48 per cent (projection Q) of home entrants to higher education would be women.

It has been suggested that in the year 2000, women will constitute about 40 per cent of the total of British born doctors (Bolt, 1983) or 37 per cent of doctors active in medicine (DHSS, 1985). In 1979, 86 per cent of women doctors were working in medicine to some degree, compared with 88 per cent of men, but it was not clear how many more of the former were working full time (Bolt, 1983). The 1978 DHSS Medical Manpower report had suggested that by the year 2000, women doctors would on average be active for 39 years (30 years whole time).

The 1985 survey by Seward and McEwen (1987) reported that 43 per cent of the 1985 intake to dental schools were women and found that 48 per cent of women dentists were practising full-time, 40 per cent part time and 12 per cent (including retired people) not at all. The BDA in 1986 suggested under 65 activity rates of 95 per cent for men and 80 per cent for women. It was suggested by the DHSS in 1983 that by the year 2020 between 35 and 45 per cent of registered dentists under the age of 65 would be women but just three years later these estimates were being revised upwards to 42 per cent by the year 2015 (BDA, 1986).

Although a woman was first admitted to the Institute of Chartered Accountants in 1920 (she had submitted her first application in 1891; Silverstone and Williams, 1979), in 1969 the

continued on page 38

STRENGTH OF THE PROFESSION

continued from page 36

number of women attempting to become chartered accountants still only amounted to two per cent. In more recent years the intake of women students has increased markedly from 15 per cent in 1976 to 32 per cent in 1985 (The ICA, 1986). In 1979, 30 per cent of all women accountants worked part time with a higher proportion amongst those with children.

The manpower review of the veterinary profession (Ministry of Agriculture, 1985) estimated that male veterinary surgeons were on average equivalent to 77 full-time veterinary equivalents (FTVE)-one FTIV equalling 7.5 hours' practice on 254 days making 1,905 hours per year. The activity rate of women was estimated at 62 FTVE. In 1979, 12 per cent of the profession were women. By 1984 this proportion has reached 19 per cent and the manpower review suggests that the intake to veterinary courses was likely to consist of 50 per cent men and 50 per cent women with the latter showing a 93 per cent pass rate-two per cent higher than their male colleagues.

In 1972, 23 per cent of pharmacists on the home register were women (Pharmaceutical Journal, 1986). By 1985 this had risen to 36 per cent. Currently, 60 per cent of the intake to the profession are women. Just over half of women pharmacists aged 35 to

49 are employed part time. Younger women, and older ones up to the age of 60, are more likely to be employed full time. A survey by Rees (1983) of the attitudes of students showed that 38 per cent of women would wish to work full time as the children grow up. The proportion of women pharmacists employed 'not at all' has fallen from 20 per cent in 1978 to 15 per cent in 1985 (Pharmaceutical Journal, 1986).

In the United States the proportion of women entering optometry programmes has increased 52 per cent since 1980 and they now represent almost 40 per cent of recruits (Peters, 1987). Practising female optometrists are predicted to increase from eight per cent in 1984 to 23 per cent by the end of the century.

To assess manpower in optometry today one must first look at full-time equivalents to examine what part sex and age play in affecting the contribution of today's practitioners to their professional work.

Survey of registered optometrists in 1986

At the end of July 1986, questionnaires were sent to every optometrist on the GOG Register. The pattern of replies followed the familiar skewed temporal distribution—90 per cent had been

received by mid-September 1986 but the odd questionnaire was still being returned in January 1987. December 31, 1986 was taken as the last date for accepting replies but this led to the exclusion of just two replies.

In June, 1986 there were 6,176 paidup optometrists on the GOG Register. By the end of December, 2,070 replies had been received—a 34 per cent response rate.

Previous experience (French and Loran, 1983) has shown that one obtains a higher response rate from the younger practitioners. They have a greater investment in and concern for the future and are more active. Despite exhortations directed at those near to retirement or inactive, the pattern was confirmed with this study. For those born before 1910 the response rate was only 11 per cent while for those men born in 1960 or later it was 48 per cent (see Table 1).

Full-time equivalents

The problem with assessing optometric manpower is that not everyone is involved to the same extent and in the same way in professional work. Some people work part time, some are involved solely in management, some do a lot of dispensing work, some are retired and so on. For the last 10 years,

Table 1: GOC Register totals and questionnaire responses by age and sex

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	GOC Register population						Questionnaire			Questionnaire	
	Dec 1985			Dec 1986			(sample size)			(weights)	
	М	F	т	м	F	Т	М	F	Т	М	F
Date of Birth	6.658				(and all	10.01		100	1 192	17.19165	197 1080
<1910	189	4	193	171	6	177	20	0	20	8.7498	_
1910-4	341	11	352	277	7	284	47	2	49	6.3917	6.8054+
1915-9	393	17	410	333	13	346	74	3	77	4.7690	9.2359+
1920-4	374	14	388	352	13	365	71	0	71	4.9706	
1925-9	444	42	486	427	40	467	94	8	102	4.5042	4.9825
1930-4	373	52	425	383	53	436	115	20	135	3.1956	2.5520
1935-9	330	79	409	314	80	394	102	25	127	3.0691	3.0916
1940-4	346	118	464	362	119	481	127	44	171	2.7099	2.6183
1945-9	484	176	660	465	174	639	175	66	241	2.6361	2.5778
1950-4	488	350	838	492	357	849	182	130	312	2.6175	2.6437
1955-9	585	474	1.059	589	482	1,071	231	207	438	2.4705	2.2450
1960 +	313	334	647	401	465	866	167	150	317	2.0783	2.5893
total	4,660	1.671	6.331	4,566	1.809	6.375	1,405	655	2.060*	3,1920	2.5826

*2,070 people replied to the questionnaire but 10 did not give their sex. Questionnaire weights denoted with ' + ' have been adjusted for adjacent categories. All weights were calculated to give the average proportion of the December 1985 and 1986 Registers, and a total of 6,176, this being the number of people on the Register at the time of the survey in mid-1986.

the total number of ophthalmic opticians registered for work by the GOG or enabled to practise by appearing on FPC lists has increased virtually every year after going through a period of modest decline. It is interesting to note that the ratio of the annual FPC List to GOG Register totals is not constant and this together with the fact that not all the FPC practitioners are necessarily active means that detailed trends remain unclear.

During this time there has been a reduction in the annual number of men admitted to the universities and a rise in the recruitment of women. Primary interest has focused on this latter group because little is known about their likely pattern of professional involvement. They will cease to practise for periods of time because of family commitments and have a greater tendency to work part time. A question mark also remains over their likely age at retirement. It has long been known that the pattern of men's working varies with age, but these varying activity rates cannot be determined from GOG or FPC statistics alone.

Annual number of sight tests

In some ways it might be felt that the most obvious index of productivity would be the number of sight tests carried out under the General Ophthalmic Service. This would only appear to ignore the very small number of private sight tests carried out by OOs (median of six per annum); the proportionately small number of sight tests carried out under the Hospital Eye Service by the 100 or so full-time and small number of part-time hospital OOs; and, in Northern Ireland, sight tests under the Community Health Service for school children.

Unfortunately, this measure neglects dispensing. Although it might be argued that all this work could be carried out by dispensing opticians, this may be unrealistic as the present study shows that fewer than 12 per cent of active optometrists carry out no dispensing work. It also takes no account of contact lens work carried out by approximately 60 per cent of OOs.

Also, there is work which could only be undertaken by an optometrist—such as supervising pre-registration OOs (12 per cent of OOs). And the sight testing measure does not include time spent on writing to ophthalmologists and doctors, carrying out domiciliaries (64 per cent of OOs) and so on.

In order to convert annual sight tests into an FTE index, one needs to decide what figure should represent 100 per cent. If you focus on attendance time one can take 46 or 47 weeks in a year as full-time working but what is a sensible figure for full-time working expressed in sight tests? The median figure for the most active (25 to 29 years of age) male group is a possibility but this value of 2,500 tests per annum returns an arithmetic mean index of over 100 per cent for this group. Alpine's approach in 1970 was to choose a level of 23 tests and over per week (1,104 and over per annum on a 48-week year) as representing one full-time 00.

Weekly hours of attendance

'Hours of attendance' was preferred by Alpine (1970) who felt this was 'more likely to be clear to the optician than numbers of eye examinations'. As already indicated, not all the professional work of an 00 will show up in sight test figures, however, older practitioners tend to maintain their hours of attendance better than their number of sight tests suggesting that this measure tends to overestimate their work production. Alpine responded to this trend by giving the oldest practitioners (those over 75) a zero equivalence and discounting their contribution entirely. He also used broad categories in his calculations rather than detailed estimates.

Annual hours and annual days of attendance

It would be naive to expect that people always answer questions as accurately as they might. This was one reason some questions in our survey were asked in more than one way. Although the question on weekly hours of attendance included the underlined phrase 'averaged for a single week' it was clear from examination of the answers to other questions that this averaging had not always taken place with people tending to give 'typical' (modal) responses rather than an arithmetic mean. A brief series of continued on page 40

STRENGTH OF THE PROFESSION

continued from page 39

questions elsewhere on length of holidays, weeks worked full time and part time, and corresponding weekly hours of attendance permitted the calculation of annual hours and annual days of attendance to give two further indices of full-time equivalence.

Weighting questionnaire responses

Irrespective of whether the response rate to a questionnaire is good or poor it is essential to check for bias. The age distribution of registered optometrists is known and this provides one external check. A further external check is provided by comparing respondents' answers with the official totals for sight tests for the previous 12 month period.

If we assume that our sample who reported their sight tests total is a representative one then dividing the total number of tests claimed by the proportion of respondents should give us the UK total for the period July 1, 1985 to June 30, 1986. Unfortunately, the number obtained in this way is 18 per cent too high at 12.40 million compared with an actual figure of 10.49 million.

Analysis of the age of respondents showed the highest response rates for the youngest and most active practitioners (48 per cent) and the lowest for the oldest and least active (11 per cent). Weighting the responses enables us to obtain weighted sample sizes which correspond to the GOG Register population. This improves our estimate of GOS sight tests carried out over the 12 month period to 11.69 million.

Thus, even allowing for lower response rates from older and less active OOs it would appear that our sample still overestimates the number of sight tests carried out nationally by 11 per cent. Only an *estimate* of sight tests was requested but 20 per cent of practitioners apparently gave an exact number. Of the remainder a few presented figures to the nearest five, but most gave a total ending in zero, rounding to the nearest 100, 250 or even 500 (there was no clear evidence that any rounding to the nearest 1,000 had occurred). It would appear reasonable to assume that the rounding was carried out upwards rather than downwards. To compensate for this we can apply a correction subtracting (for example) 250 from those responses which had been rounded to the nearest 500. This results in a revised estimate of 11.05 million tests over 12 months which is just five per cent more than the actual UK total.

In the above calculations the respondents in our sample who failed to report their sight test totals have been treated as similar to the rest of the sample, but scrutiny of their questionnaires shows that 40 per cent of them are over retirement age and that their reasons for not entering a figure is more likely to have been because it was close to zero. This accounts for a further 130,000 sight tests.

There is one further source of bias which has not been taken into account. The response rates from Northern Ireland, Scotland and Wales were each three-quarters of that from England. No attempt has been made to compensate for this because it would only account for a further 20,000 sight tests nationally leaving a final estimate of sight tests for the 12 month period of 10.91 million compared with the known figure of 10.49 million.

The difference of 410,000 or four per cent is a little larger than can be accounted for by random sampling error and suggests that a small source of bias of at least a couple of per cent remains uncorrected. It would appear that there is a small tendency over and above that due to age for the more active practitioners to return their questionnaires and suggests that actual levels of activity are probably a few per cent lower than our finally adjusted figures would indicate.

Inactive optometrists

Leaving aside the question of part-time working, it is clear that some practitioners on the GOG register are currently not working as optometrists. They may be inactive for various reasons and this inactivity may be temporary or permanent. In mid-1986 almost 500 of the BCO's members were listed as 'non-practising' but the names of only 175 of these inactive optometrists appeared in the GOG Register (three per cent).

Inactivity can also be assessed by comparing the totals of the annual (net) UK FPC list and GOG Register. There is a little uncertainty in my mind over the month to which the former apply in the earliest years as published figures do not always appear consistent, but for recent years both refer to December. Clearly, in order to receive payment for GOS sight tests one's name must appear on an FPC list, but cessation of work does not automatically lead to one's name being crossed off either a list or the Register. Subtracting the FPC total from the GOG total gives another lower-bound estimate of inactivity. The figure one obtains in this way has varied between 500 and 200 in the last eight years indicating, for example, that at least three per cent of practitioners appearing on the Register were inactive at the end of 1985 and upwards of 6 per cent at the end of 1983.

These BCO/GOC and FPC/GOC comparisons provide us with lower-bound measures of inactivity. The questionnaire on the other hand provides us with a direct estimate. We can define being inactive as zero annual hours of attendance, annual days of attendance, hours per week of attendance or annual GOS sight tests. Three out of four of these measures give similar results for the mid-1986 Register: 356, 354 and 346 out of 6,176, or 6 per cent. But the sight test index gives a slightly larger estimate at 416 (7 per cent). As expected, these figures are larger than the lower-bound estimates. The evidence shows very clearly that more than 3 per cent of OOs on the GOG Register are inactive and suggests that the true number is closer to 6 or 7 per cent-at least for the mid-year Register.

In part two of his series to be published shortly, Chris French considers the strength of the profession in terms of the full-time equivalence of practitioners.