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STATISTICAL NEWS

Developments in British Official Statistics

Note by the Editor

The aim of *Statistical News* is to provide a comprehensive account of current developments in British official statistics and to help all those who use or would like to use official statistics.

It appears quarterly and every issue contains two or more articles each dealing with a subject in depth. Shorter notes give news of the latest developments in many fields, including international statistics. Appointments and other changes in the Government Statistical Service are also given.

A full, cumulative index provides a permanent and comprehensive guide to developments in all areas of official statistics.

It is hoped that *Statistical News* will be of service and interest not only to professional statisticians but to everybody who uses statistics. The Editor would therefore be very glad to receive comments from readers on the adequacy of its scope, coverage or treatment of topics and their suggestions for improvement.

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Developments in British official statistics

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NOTES ON CURRENT DEVELOPMENTS

*indicates an international aspect

Duration of unemployment

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For many years the Ministry of Labour has published statistics of the numbers of persons on the register of wholly unemployed analysed by the number of weeks they have been on the register. Although these analyses are valuable they have serious limitations. They tell us how long persons have been on the register but they do not tell us how much longer persons who are already on the register (or who have just come on the register) may expect to stay on the register. What are the chances that a new registrant will go off the register within say 2 weeks or 8 weeks? What happens to the person who has already been on the register for 6 months or a year?

Since the war unemployment has been kept to a low level. Between 1961 and 1965 the average rate of unemployment for those wholly unemployed was 1·7 per cent. What happens if the general level of unemployment in the future is higher than it has been in recent years? We want to know by how much an increase in the general level of unemployment raises the time which a new registrant can expect to stay on the register and whether this increase is greater for those who have been on the register for a long time than for those who have been on the register for a short time. In other words does an increase in the general level of unemployment lead to an increased turnover (number coming on and going off the register each week) or to an increase in the time spent on the register and by how much?

These questions cannot be answered by the existing statistics of duration on the register. What we need for this purpose is something similar to a life-table which actuaries use for calculating expectation of life and probabilities of survival or death. This article summarises work which has been carried out to this end and is described in more detail in *Duration of Unemployment on the Register of Wholly Unemployed*, the first of a new series of research papers. The main purpose was to construct what is called a 'stationary register' of the wholly unemployed, similar to an actuarial life-table. This has been done for the period 1961–1965 when the average number of persons on the wholly unemployed register in Great Britain was 398,000 or 1·7 per cent. Stationary registers for Great Britain have also been compiled for males and females separately. For each of the standard regions stationary registers have also been compiled but for totals only. These stationary registers have the important property that the results are free of both seasonal and cyclical variations. The results are subject to a number of qualifications but there is good reason for supposing that they are sufficiently reliable to be used and that a number of fairly firm conclusions can be drawn from them.

Short-period turnover element

One of the most important findings is the magnitude of the short-period turnover element in the wholly unemployed register. During the period 1961 to 1965 the stationary register of 398,000 wholly unemployed was maintained by 57,000 new registrants each week offsetting 57,000 who left each week—a turnover rate of 14·3 per cent a week. Of the 57,000 new registrants each week 15,000 could expect to leave within a week and 39,000 (or 68 per cent) could expect to leave within four weeks.

A group of new registrants during any period contains a large proportion of persons who stay on the register for a very short time and a much smaller proportion who stay on the register for a long time. During the period 1961–1965, 6·4 per cent of a group of new registrants were responsible for 50 per cent of the total number of days ultimately spent on the register by the group. Less than 2 per cent of a group of new registrants spent more than a year on the register but they were responsible for 29 per cent of the total days spent on the register by the group.

The longer a person has been on the register the longer he can expect to remain on the register and the chance of going off the register gets less and less. The average number of weeks per person that will be spent on the register by a group of new registrants is 7·0 weeks. But those who have been on the register for 52 weeks can expect to spend on the average a further 59 weeks per person on the register. For the person who has been on the register for not more than two weeks the chances of going off the register within a week are 27 out of 100. But for the person who has been on the register for 26 weeks the chances of going off within a week are only 5 out of 100 and for the person who has been on the register for 52 weeks the chances are only 3 out of 100.

Sex and age differences

Females can expect to stay on the register for a shorter time than males. The difference is not large during the first few weeks on the register but increases with the

length of time spent on the register. Age is an even more important factor. For those under 25 years of age the average number of weeks a new registrant can expect to remain on the register is as low as 4 weeks and there is little difference between males and females in this respect. On the other hand the expectation for both males and females over 55 years of age is four to five times as great as for those under 25 years old.

Regional differences

The characteristics mentioned above were found generally in each of the standard regions. But one of the most important results of the regional analysis was that regional variations in unemployment rates were not coincidental with regional variations in turnover rates. Although the percentage rate of unemployment was the same in the East Midland region as in London and South East, the expectation for a new registrant (i.e. the number of weeks he can expect to remain on the register) was much higher (and therefore the rate of turnover was much lower) in the East Midland region. In other words, although the chance of being unemployed during the period 1961–1965 was the same in both regions, the chance of going off the register within a given number of weeks was greater in London and South East than in the East Midlands. Unemployment in the East Midlands tends to be concentrated on a smaller proportion of workers each of whom can expect to spend a longer time on the register than the worker in London. Similarly although the rate of unemployment was almost the same in Northern Region (3·3 per cent) as in Scotland (3·4 per cent) the rate of turnover was greater in Scotland.

What happens when we move to a higher general rate of unemployment?

All these results were derived from stationary registers based on the period 1961–1965 when the average rate of unemployment in Great Britain was 1·7 per cent. How far would these results be affected if the general level of unemployment were higher than 1·7 per cent? It has been possible to make estimates of stationary registers for various rates of unemployment between 1·0 and 4·0 per cent. These show that as the stationary register rises both the number of persons coming on the register and the number going off the register each week rises. That is, although the *rate* of turnover falls it does not fall proportionately with the rise in unemployment. When the stationary register rises from 1·7 to 2·5 per cent the number of persons leaving the register each week rises from 57,000 to 71,000 (a rise of 25 per cent) while the expectation of remaining on the register for a new registrant rises from 7·0 to 8·2 weeks (a rise of 18 per cent). Moreover, of these 71,000 who leave each week, 46,100 or 65 per cent will leave within four weeks. This compares with a figure of 68½ per cent when the stationary rate of unemployment is 1·7 per cent. At each level of unemployment between 1 and 4 per cent the number of persons leaving the register each week rises proportionately more than the expectation of staying on the register.

What happens as the cyclical trend varies round the long-term average

The stationary registers show what happens after the movement from one general level of unemployment to another level has taken place. It does not show what happens as unemployment changes cyclically round a given long-term average. The paper contains the results of an analysis of 47 registers between June 1961 and August 1967 which shows that as the register increases during a cyclical upswing there is a close relationship between the increase in the number coming on the register in a week and the number of these persons who will go off the register within the next four weeks. That is, if the number of new registrants during a week rises by 100, then 50 of these will go off the register within the next four weeks. This shows therefore that even during a cyclical upswing in unemployment the short-period turnover element is still large.

Stability of distributions by duration

The similarity between the stationary registers for different levels of unemployment and for different regions and the fact that the durations of persons on these registers appear to be distributed in much the same way over a large part of the range suggest that there are some deep-seated factors which determine the shape of the distributions and which are only marginally affected by quite large variations in the general level of unemployment within the range of 1·0 to 4·0 per cent.

Short-period turnover and long-period unemployment

Although it is not possible to draw a precise line it is clear that a very large part of the register (and a large part of any group of new registrants) represents short-term turnover or movement between jobs. At the same time there is, even in times of low unemployment and extreme pressure of demand for labour, a substantial (though smaller) number of persons who have been on the register for long periods of time and who have a very small probability of leaving the register. It is known that this latter group contains a large proportion of older persons and of those who are very difficult to place in employment, because of personal disabilities rather than

of lack of demand for labour. The survey of the characteristics of the unemployed, the results of which were published in the April 1966 issue of the *Ministry of Labour Gazette*, throws further light on this group of registrants. Although there is no clear dividing line it is obvious that the two groups are completely different both in the nature and the causes of their unemployment and almost certainly different measures are needed for minimizing the economic and social costs involved.

Reference

Duration of Unemployment on the Register of Wholly Unemployed, Studies in Official Statistics (Research Series) No. 1, (HMSO), August 1968 (Price 6s. 0d. net).

Science statistics: Part 1, Manpower

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Exploding science

A speaker at a gathering of distinguished scientists is said to have remarked: 'Today we are privileged to sit side by side with the giants upon whose shoulders we stand'[1]. This is an aspect of the famous 'statistic' that 90 per cent of the scientists who have ever lived are alive today. Both observations are a reflection of the high growth rate of scientific manpower or of scientific activity however measured.

It is sometimes said that, if this high rate of growth continued, in due course every man, woman and child would be a scientist. It is certainly true that high growth rates of particular groups within a population can produce startling results if they are sustained for any length of time but of course they are inevitably bounded by the growth of the population as a whole. The point at which slackening off is likely to occur—clearly crucial in forecasting—is open to much debate (Toulmin)[2].

This impression of exploding science is probably more vivid to many people than most other manpower statistics. Yet figures showing the magnitude of our scientific research and development effort, and the manpower undertaking it, are late comers to the statistical field compared with, say, population or trade figures. In fact they are a post-war product, the war itself having drawn attention in an unmistakable way to the significance of technological prowess and innovation and its foundation in basic research. This article is the first in a series discussing the statistical material available about science, mainly from official sources, and deals with *scientific manpower*, the term I shall use here for brevity to cover all persons with a degree or equivalent qualification in engineering, technology and science. Later articles will deal with expenditure on scientific research and development, international statistics on science, and some of the more analytical work on manpower forecasting models now being carried out by government statisticians utilising the data referred to here. Other developments of interest will appear from time to time either as notes or articles. For example a note on the 1968 triennial survey of scientific manpower appeared on page 1.21 of the first issue and one on the survey of professional engineers, carried out jointly by the Council of Engineering Institutions and the Ministry of Technology, appears on page 2.20 in this issue.

The most comprehensive recent statistics about science and technology in Great Britain appear in *Statistics of Science and Technology*[3] prepared by the Department of Education and Science and the Ministry of Technology. This was published in 1967 as the first of an annual series intended to present in one document all regular and quasi-regular statistics in this field. The second volume is in preparation.

To understand the significance of the data some knowledge of the organisation of scientific research in Britain is useful as they often refer to the various sectors of the economy undertaking or financing research—government (including the Research Councils), universities and technical colleges, public corporations, private industry, research associations, non-profit-making organisations. The present structure of government-supported civil science, set up after the 1963 report of the Committee of Enquiry into the Organisation of Civil Science (the Trend Report)[4], was described in the first report of the Council for Scientific Policy (1966)[5]. A general account of the organisation of scientific research in the United Kingdom, covering all sectors, appears in one of the OECD Country Reports[6].

SCIENTIFIC MANPOWER

At present there are in Great Britain about 350,000 persons with a degree or equivalent qualifications in engineering, technology or science. They form less than 1½ per cent of the working population but their number is growing at about 4½ per cent per annum compared with less than 1 per cent for the working population. Two simple but important aspects of these figures deserve mention. First, the employment of scientific manpower has been spreading through the economy and will go on spreading, though not necessarily evenly over all occupations and industries. Second, the supply of scientific manpower must be growing at the expense of other kinds of manpower, either with qualifications in other subjects or with lower levels of qualification. The level of qualification in the country as a whole is of course rising as a result of the expanded higher education programme. But within this programme science is a competitor for men and money with other areas such as medicine, accountancy, the law, social science and the arts.

Definition

The first serious statistical study of scientific manpower in this country was summarised in the report of a

committee appointed at the end of 1945 by Herbert Morrison, the Lord President of the Council, to 'consider the policies which should govern the use and development of our scientific manpower and resources during the next ten years . . .' (the Barlow Report)[7]. The committee defined *qualified scientists* as graduates in mathematical, physical, chemical and biological sciences together with non-graduates who were 'members of recognised scientific institutions with a membership status accepted as the equivalent of a university degree in these subjects'.

Two limitations of this study are of particular interest. First, although the report contains a general discussion of needs for engineers, the definition and the numerical assessments related to scientists only and excluded engineers and technologists. Second, the social sciences were not considered, the investigation being confined to persons with qualifications in the natural sciences. Subsequent studies, while retaining the essence of the definition, have expanded it to cover engineers and technologists, thus removing the first limitation, and have listed the particular institutions whose membership status was taken as equivalent to a university degree (including later the Diploma of Technology). *Statistics of Science and Technology* for example mentions (page 30) that statistics from 1958 to 1964 cover associateship (and diploma holding) of ten specified educational institutions and 'graduate' or corporate membership of twenty-one professional institutes.

The scientific manpower enquiries have generally been concerned with people with *qualifications* of degree level or equivalent. The rather more difficult question of defining *technicians* and other technical supporting staff, which involves listing occupations rather than qualifications, is discussed in Section VII of *Statistics of Science and Technology* and also in the *Report of the 1965 Triennial Manpower Survey of Engineers, Technologists, Scientists and Technical Supporting Staff*[8].

Among the qualified people excluded by the above definition, and therefore not covered in the triennial surveys of scientific manpower discussed in this article, are social scientists, medically qualified persons, architects, surveyors, actuaries and accountants, unless they *also* hold one of the above qualifications.

Manpower models

This article deals only with the sources of basic data on scientific manpower and their coverage. It is not a detailed critical discussion of methods or results and, except for a section at the end about past published forecasts, does not deal with their analytical use. Nevertheless a few remarks about the use of manpower statistics may illuminate the subsequent account of the strengths and weaknesses of those currently available.

Manpower models, usually covering all kinds of manpower whether qualified or unqualified, are fashionable as a means of indicating the effects of existing policies on the future composition and distribution of manpower or, conversely, of assessing what policy changes are needed in order to achieve certain manpower targets. The complete picture of the present numbers of people with particular qualifications in each industry and occupation may be called the present *state* of the qualified population. One aim of a model might be to project future states of the population from a knowledge of the present state and of the past trend of movements between industries and occupations, acquisition of new qualifications, and entries or exits from the population, modified perhaps by an assessment of the future effect on these trends of changes in education or manpower policy. In more usual terminology, this kind of analysis is concerned with the *stock* of qualified manpower and with the effect on its structure of *flows* into, out of and within it.

A good deal of theoretical work on general manpower models has been carried out (see for example *Statistical News* No. 1, page 1.21) and efforts have been made to fit demographic data and education statistics into a general system of stocks and flows[9]. But our knowledge of this system, even in respect of scientific manpower which has been intensively studied, is very patchy. From the 1961 and 1966 Censuses of Population we get an excellent picture of the stock of scientific manpower at those times, how it was distributed in the various industries and occupations and also other details such as its age and sex composition. Between censuses we can get from surveys incomplete and less detailed snapshots. By comparison the information on flows is rudimentary, although work is in hand to develop it. The basic flow information is the new supply of qualified people emerging from the educational system or via the professional institutions, classified by the type and subject of qualification and by sex. From the point of view of statisticians who are involved in educational and manpower planning the ideal would be to follow samples of individuals with particular educational histories through their working careers, noting further training and further periods of education. But this is technically and administratively very difficult at present and the data would accumulate slowly. The little that is known about first and subsequent movement into the working population is described below. Some information on flows out of the system through emigration, retirement and death, and flows within the system between industries and occupations, is slowly emerging from special surveys but it does not yet form a coherent picture. As I have mentioned it has also become increasingly clear that the study of supply and demand raises questions of the relationship between scientific

and other kinds of manpower, and there has been a growing demand for statistics covering qualified manpower of *all* kinds. The results of the 1966 Census of Population will provide the first comprehensive picture of this field.

It will be clear that statistics on scientific manpower are not yet sufficiently developed to meet the full requirements of model building and in any case need supplementary information on other kinds of manpower. Nevertheless it is useful to set the following account of available statistics against the background of theoretical needs.

Stock

The Barlow Committee in 1946 arrived at an estimate of 55,000 as 'the existing capital of qualified scientists' by adding up the output from universities, etc., over the previous thirty years—taking this as the average professional life—and subtracting an estimate of deaths[7]. The word *capital* in this context has the same meaning as *stock*, of which the Barlow Committee's was probably the first estimate in this country. Subsequent estimates have been based on sample surveys of employers or censuses of population, and by demographic techniques which are used to carry forward census figures—for example in Table 23 of *Statistics of Science and Technology*. (In the absence of survey or census data, the Robbins Committee[10] in 1963 used the Barlow method to estimate the stock of *all* graduates in 1938, 1951, 1961, 1971, 1981.)

In 1956, ten years after Barlow, a report was issued jointly by the Ministry of Labour and National Service and the Advisory Council on Scientific Policy giving first the results of a sample survey of employers carried out by the Ministry of Labour and the Social Survey and second an assessment by the Committee on Scientific Manpower of the likely trend in the long-term demand for scientists and engineers[11]. The latter was intended to be of guidance to the University Grants Committee in dealing with the universities' plans for expansion in the quinquennium 1957–62. The survey yielded an estimate for early 1956 of a stock of some 56,200 scientists and 78,500 engineers in employment—a total of about 135,000 qualified people including a very tentative estimate of 15,000 for the fields not directly covered by the enquiry, such as agriculture, shipping, distribution, service trades, small firms, self-employed and consultants. No allowance was made for persons engaged in post-graduate research, science graduates doing national service, or for the self-employed. There was some discussion on page 9 of the report of the disparities between the 1956 survey figures and the Barlow estimates which were of course derived by a different method. The 1956 report also mentioned that the universities took only four years to implement the main Barlow recommendation that 'output should be doubled at the earliest possible moment to give 5,000 newly qualified scientists per annum'.

In principle, the 1956 enquiry covered all government institutions and nationalised industries and a sample of establishments in manufacturing industry. This was the first of a triennial series of almost identical design, the others being in 1959[12], 1962[13], 1965[8] and 1968 (the fifth, now in the field: see *Statistical News* No. 1, page 1.21).

In each enquiry—with only relatively small modifications over the series—employers were asked to state in respect of each of fourteen or so subjects of qualification the number of qualified people employed (*a*) on research and development, and (*b*) other work, the number of vacancies, and the number of persons they aimed to employ three years later. The reports summarise the answers for each sector of the economy and for each order of the Standard Industrial Classification, and relate the employment of qualified people to the total of all employees. Recent reports have become more detailed, giving for example growth rates and comparisons with previous forecasts. I return to the forecasts later.

The surveys have also progressively increased their coverage while retaining essentially the same questions. In 1962 the fields of employment were extended to include the Independent Television Authority and selected firms in the distributive trades, in shipping and other transport and in the cinematograph industry. Information was also sought from the Association of Consulting Engineers. The definition was also extended to cover qualifications in agriculture, science, pharmacy and further branches of technology and membership of additional professional institutions (Appendix A of the 1962 Report[13]). In 1965 further sectors were covered for the first time, including clearing banks and accepting houses, shipping firms, port, dock and harbour authorities, and a sample of firms in insurance and estate management, private water supply, and consulting engineering (page 41 of the 1965 Report[8]).

An important feature of the 1962 Report was the discussion of the substantial differences, described in the next section, between the triennial survey figures and those from the 1961 Census of Population in which, for the first time, people were asked to state what qualifications in science and technology they had. (The 1966 Census of Population has gone further by asking for qualifications in *all* subjects and the results will appear in a census volume on qualified manpower.)

Following the advice of a Joint Enquiry on Technicians (Appendix B of ref. 25) the 1965 survey[8] broke new ground by asking for data about *technical supporting staff* as well as scientists and engineers. As many of

these had no formal qualifications the survey was conducted on the basis of a description of work performed, discussed in detail in Chapter V and the Appendix to the report. An earlier pilot exercise on the employment of technicians in the chemical and engineering industries (reported in the *Ministry of Labour Gazette*, December 1960[14]) had indicated that substantial numbers of technicians also had graduate-level qualifications and the 1965 questionnaire was designed to explore this and also avoid double-counting. An estimate of 622,000 technical supporting staff was given in the report, of whom 17 per cent had a degree (or equivalent), Higher National Certificate or Higher National Diploma.

Definitions and problems of interpretation and the implications of the survey results were discussed in rather more detail in the 1965 report than in earlier reports. A section in Chapter IV dealt in particular with the distinction between *demand*, which relates to the community's, including the employers', willingness and ability to pay, and *need* which relates to stated objectives of an organisation or community: it is possible to satisfy demand without satisfying need. For the first time in this series standard errors were quoted for those estimates based on a sample. The results, including the comparison with the 1962 figures were summarised in Section V of *Statistics of Science and Technology*.

The results of the 1968 survey, the fifth in the triennial series, are now being processed. Its scope and coverage is similar to the others, except that consultancy has now been covered more thoroughly and questionnaires have been sent to a larger sample of establishments in manufacturing industry and construction. Information on technicians is also being sought. A linked pilot study, intended to throw light on the utilisation of scientific manpower by analysing their *functions* in enterprises, is simultaneously being undertaken in conjunction with 50 large firms and a lesser number of small firms (*Statistical News* No. 1, page 1.21).

Surveys and Census

I mentioned earlier that about 15,000 was added to the survey results in 1956 and 1959 for sectors and types of employment not covered directly by the enquiries. This was hardly more than a guess and it was partly the pressure to know more about the uncovered areas, and also to have more comprehensive statistics (for example on age) as a basis for forecasting, which led to the inclusion of a question on this topic in the 1961 Sample Census of Population. As with other detailed questions in this census this was addressed only to a 10 per cent sample of households and persons in institutions, etc. The Registrars General published the results in a separate volume[15].

The grossed-up sample figures from the 1961 Census, totalled 247,970 qualified persons in employment, compared with 183,940 from the 1962 Survey. Of the 64,000 difference about 38,000 were in the sectors entirely outside the survey coverage—a much larger number than had previously been allowed. Other divergences related to the quite different nature of the two kinds of enquiry: while both involved sampling, the census was compulsory and addressed to *individual households*, whereas the surveys were voluntary and addressed to *employers* in a limited range of industrial activities. A particularly important factor was that employers could include only persons they knew to have qualifications and there would be a tendency therefore to overlook qualified persons in occupations with no direct relation to scientific and technological qualifications. The factors restricting direct comparison between the surveys and the census are discussed on pages *xiii* and *xiv* of the census report[15].

The census threw a great deal of light on the areas not covered by the triennial surveys. Like much census data it yielded somewhat unexpected results which at first sight call for further examination: for example that there were apparently substantially more mathematicians in religious organisations than in the chemical industries or metal manufacture or the distributive trades. It also yielded entirely new data on the age, sex and occupational distribution of the qualified stock and details of the 23,000 persons working in the United Kingdom who were born outside the British Isles. In addition it provided a better estimate of the overlapping degree and non-degree membership of professional institutions.

One weakness of the census figures is that they are analysed according to the Standard Industrial Classification under which the private sector of industry is not completely separated from the public sector. Thus separate manpower statistics for these sectors are not available from the census.

Growth of the stock

Although practically the same questions have been asked throughout the triennial series of surveys, improvements in survey techniques and the extensions of coverage mentioned earlier mean that the figures as published are not precisely comparable. Each report contains a comparison with the previous survey of three years earlier. Table 23 of *Statistics of Science and Technology* gives a run of six years from 1961 to 1966 on the wider coverage provided by the census. The annual figures are not entirely independent observations, being estimates carried forward from the 1961 Sample Census results by the demographic method referred to above. They reflect the additions to the stock of the new output from the various institutions and show annual increases of between 4 and 5 per cent both for scientists and technologists. The 1966 Sample Census of Population

figures will of course give the best estimates of growth in the total stock since 1961, as the definitions employed were practically identical and the sector coverage complete. Preliminary processing suggests that the stock has increased by over 62,000, the equivalent of 4½ per cent per annum over the five-year period. As with other sample data some caution would be needed in using estimates of the growth of small aggregates.

Section IX of *Statistics of Science and Technology* gives details of the growth during the period 1962–64 of employment of science and technology graduates in schools, further education establishments and colleges of education in England and Wales. Figures are given also for academic staff in universities by faculty (Great Britain) for the years 1960–61 to 1964–65.

Type of work

A substantial proportion of the scientific manpower in this country is not engaged on scientific research or development work. Many are in jobs which do not appear to be associated in any way with engineering, technology or science. Views differ as to whether this should be regarded as 'wastage' of qualified people, to be taken into account in planning future educational output, or as a valuable diffusion of the scientific outlook into all walks of life. The triennial surveys have provided a partial assessment of the situation by asking employers whether their qualified people were engaged on research and development or other work.

The most recent results, from the 1965 survey, show that there were 52,000 qualified scientists (including engineers and technologists) employed in the education system and most of those in higher education would spend some part of their time on research; other sectors covered by the survey employed one-third of their 160,000 qualified scientists on research and development. No information was of course available from the 'uncovered' sectors I mentioned earlier, but the 1961 Census of Population gave the first comprehensive picture of the wide dispersion over occupations and industries. The census as currently organised cannot provide detailed information on an individual scientist's work other than in terms of his occupation, industry and qualifications. As the simple analyses from the triennial surveys do not add a great deal more, a pilot enquiry into the practicability of a rather finer analysis of the type of work carried out has been undertaken by the Ministry of Technology and linked with the 1968 Survey (see *Statistical News* No. 1, page 1.21).

Flows

New supply of qualified people

New entrants to the stock qualify for entry through receiving an appropriate degree or diploma, or through associateship of membership of the institutions mentioned earlier. In 1966, the most recent year for which comprehensive output figures are available, 11,600 scientists and 11,800 engineers and technologists qualified in Great Britain, giving a total of 23,400, that is about 7¾ per cent more than in 1965. Of this total about 16,800 qualified by gaining a degree and 6,600 by gaining a university diploma, or associateship or membership of the professions or other bodies mentioned above. Section IV of *Statistics of Science and Technology 1967* gives a consistent series of annual figures of new supply for the years 1960 to 1965 for each method of qualifying and for each main subject of qualification. They supersede the figures of output given as supplementary information in the survey reports. The figures for the number of new graduates are based on university appointments officers' statistics which differ from those published by the University Grants Committee firstly in respect of timing, secondly by including external degrees, and thirdly by avoiding duplication when a graduate obtains more than one award.

These and the other manpower tables in *Statistics of Science and Technology 1967* employ the same subject classification as the manpower surveys mentioned above and as the 1961 Census of Population. Footnotes indicate where it differs from the standard subject classification used for university degree statistics. The latter was published in *Statistics of Education 1965, Part Two*[16] and has been developed for use in all education and first employment statistics. The comprehensive and more detailed version of this subject classification is about to be published by the Department of Education and Science and will form the basis of the 1966 Census tabulations on qualified manpower.

To set up a model of qualified manpower such as I mentioned earlier the output of qualified people and other additions to the stock need to be related to their subsequent employment in the various sectors of the economy. At present this territory is badly charted. A number of cohort studies have been reported which track down, with varying degrees of success, graduates of an earlier year to see what they are doing. Most of these studies are university research projects. At present there is no continuous comprehensive monitoring system for providing such information. Two other flows into the pool of qualified people also practically unmeasured, particularly in terms of their employment, are immigration and the return of temporary emigrants and the return of women who had withdrawn from employment on marriage.

A first link between the education system and employment of most university graduates is provided by figures of *First Employment of University Graduates* collected by the university appointments officers and, for those graduating in or after 1961–1962, published under this

title by the University Grants Committee. The latest issue covers those graduating in 1965–66[17]. Separate figures are available for higher degrees and for first degrees. These statistics do not cover medical and veterinary degrees.

The figures have some weaknesses; a higher degree is entered in the year it is conferred, whereas the employment shown is that taken on first leaving the university after completion of postgraduate work; the grouping of industry and other sectors differs from that used in other statistical work; there have been changes in subject classification prior to 1962. These and other problems are discussed in Section VIII of *Statistics of Science and Technology* which presents the data for graduates in engineering, technology and science in the years 1960 to 1965 (or 1962 to 1965 for some tables) on a comparable basis. Table 38 shows the class of degree as well as sector of employment. The tables also show the number of overseas students returning home and others taking overseas employment, thus revealing the *net* addition to stock from universities in Great Britain.

The interim report[18] of the Swann Working Group, which attempted to assess whether there was any imbalance in the employment of scientific manpower, discussed the figures of first employment and their relationship to the data from the 1965 triennial survey. The final report is due to appear later this year.

Losses

The stock of manpower is continually depleted by emigration, age and sickness retirement, retirement of women on marriage, and death. The reasons for the present paucity of statistics on emigration of qualified people, and a summary of the available statistics are given in the Jones Report on the Brain Drain[19]. Further discussion of this topic appears on page 2.21 of this issue of *Statistical News*.

The number of people retiring can be assessed from the age distributions of active and inactive qualified people provided by the 1961 and in due course the 1966 Censuses of Population. So far this has not been a major factor, except in relation to certain categories of teachers, for example of mathematics, because of the accelerating flow of newly qualified young people but its importance will no doubt grow.

The 1961 Census showed that about one-third of the economically active qualified stock were women. As nearly 90 per cent of these were teachers the rather difficult problem of estimating the effects of retirement on marriage and subsequent re-employment is mainly one for the education field. This problem is under continuous review mainly in the context of the availability of teachers although availability of qualified scientists is also studied. Further information on methods used is given in the Appendices to *The Demand for and Supply of Teachers 1963–1986*[20].

Mortality rates provided by the General Register Office and the Government Actuary's Department are used for estimating losses by death but they can be applied with confidence only to fairly large aggregates.

As the stock is growing at about 4½ per cent per annum, gains far outweigh losses. If this rate continued the stock would double every 15 or 16 years and so would the proportion of scientists in the working population as the latter is growing slowly. The Robbins Committee incidentally arrived at a growth rate of about 3½ per cent per annum for the stock of *all* graduates[10].

Forecasts

I refer here only to forecasts which have been made and published, not with the methodology of forecasting in general—except for a brief reference to the particular techniques used in each case. I hope that manpower forecasting, both in respect of scientific manpower and in a wider context, will be the subject of future articles in *Statistical News*. All that needs to be done here is to draw the distinction between forecasts of *available stock* derived by manipulating the quantities already discussed—initial stock, inflow, outflow, and if possible internal flows—and forecasts of *required stock* derived from an assessment of national or sector needs.

Given an estimate of initial stock, a forecast of *available stock* depends primarily on new supply forecasts, which themselves depend on a variety of other forecasts, for example of total population, school population, subjects studied, examinations entered and passed, choices by school-leavers, university places, university fall-out rates and, finally, choices of university leavers. All of these are the subject of much study and have been, or will be, reported in *Statistical News*. Only one or two can be mentioned here. Some forecasts, for example those of university places needed, are not of course solely statistical but an amalgam of policy and an appreciation of other forecasts.

Subjects studied and examination statistics are covered very thoroughly in respect of past experience in *Statistics of Education*. Relevant extracts are given in Sections X and XI of *Statistics of Science and Technology*. Trends in these figures were assessed carefully by the Dainton Committee (*Statistical News* No. 1, page 1.20)[21] and summarised as the now well known 'swing away from science in schools'. The *Dainton Report* is a mine of statistical information on school-leavers in England and Wales and Scotland, their examination passes, the qualifications and age distribution of teachers, the proportion of tuition time given to science and so on. Of particular interest is a projection

to 1970–71 of the number of sixth-formers on 'A' level courses and also of the total potential population from which entrants to the sixth form can be drawn (Tables 1 and 31). An intricate diagram (Figure 1) illustrating the movement of pupils from 'O' level examinations in 1963 to entry into higher education in 1965 vividly demonstrates the complexity of these flows.

Annex G to the Report contains a note on the influence of the school curriculum on the flow of pupils, prepared as part of the University of Essex/Royal Statistical Society project on factors influencing choice of higher education.

The basis of the first forecast, by the Barlow Committee, of the *required stock* of 90,000 (scientists only) is somewhat obscure[7]. Their manpower problems differed from those of today and different statistical machinery was used to deal with them. The immediate post-war tasks were to redeploy civilian and military scientists as quickly as possible and stimulate university output to meet the tasks of reconstruction, the atomic energy programme, the longer-term conversion of industry, and so on. They expressed some misgivings about the universities' ability to attain their recommended output of 5,000 qualified scientists a year since, with an active life of 30 years, this would imply an ultimate stock of 150,000. In fact the output of scientists is now well over 10,000 a year and the stock is over 150,000, just under three times the 1946 estimated stock of 55,000.

The 1956 study of the likely trend in demand up to 1966 and 1970, given in *Scientific and Engineering Manpower in Great Britain*, assumed a relationship between the rates of increase of industrial production (taken at 4 per cent per annum) and the number of trained scientists and engineers employed by industry. Their calculations suggested an increase from 135,000 qualified scientists and engineers in 1956 to 220,000 in 1966, equivalent to a growth rate of 4·8 per cent a year which they projected further to 1970.

In 1961 the Statistics Committee of the Advisory Council on Scientific Policy, in *The Long-Term Demand for Scientific Manpower*[22], started with the 1959 stock and forecast demand in 1970 in two steps: first they estimated total future employment in each industry and then, from discussions with firms in the various industries about trends in the intensity of employment of qualified manpower, took a view on the future proportions needed. (In current terminology this was a 'micro'-exercise.) Different assumptions were employed in other sectors. The resulting overall growth rate for 1959 to 1971 implied by this forecast was 6 per cent a year, with a wide range of growth rates in the various sectors (Table 11 of the report). As the 1961 Census of Population revealed a rather bigger stock than had been thought, these rates might not be comparable with current estimates based on this larger stock.

Apart from these long-term estimates the only other published official forecasts in this field relate to the employers' estimates, asked for in the triennial surveys, of the numbers they expected to employ three years later. These are given in detail in the 1956, 1959, 1962 and 1965 reports and have also been asked for in the current enquiry. The number of current *vacancies*, also asked for in the surveys, is some indication of the pressure of demand, but the significance of these and other statements of demand is obscured by lack of knowledge of the extent of *substitution* either vertically, that is of a lower for a higher qualified person, or horizontally when a vacant post is filled by a person with a different kind of qualification at the same level. In manufacturing industry they have amounted to between 9 and 10 per cent of the number of qualified persons employed but with wide variations between individual industries. Details from the 1965 Survey are reproduced in Section VI of *Statistics of Science and Technology*.

A critique of these methods of forecasting demand, and also others, for example those relating to the future demand for teachers[23], was given in a paper to the Royal Statistical Society in 1964 by Professor C. A. Moser and Mr. P. R. G. Layard[24] who in their statistical work for the Robbins Committee on Higher Education had grappled with the same problems in the context of demand for highly qualified people generally. Clearly a great deal of progress has been made in building up a picture of current stock and its distribution, and gauging the effects of future supply, but on the problem of assessing the detailed pattern of demand it is I think true to say that no generally acceptable solution is in sight.

There is no convenient published list of the many studies currently in hand which bear upon these problems. The Committee on Manpower Resources for Science and Technology however devoted its first report to 'A review of the scope and problems of scientific and technological manpower policy'[25]. A list of thirty or forty research projects and investigations bearing on scientific manpower policy, some already completed at that time (October 1965), appears in Appendix C of the report. Many other activities have since sprung up and those which involve the government statistical service will be reported in *Statistical News*.

I should like to acknowledge the help and advice of several of my present and former colleagues in preparing this article.

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Northern Ireland government statistics

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The Government of Ireland Act (1920) in setting up a separate Parliament in Northern Ireland reserved certain matters, notably foreign affairs, defence, and major forms of taxation, to the Parliament of the United Kingdom, and transferred all the rest of the legislative field to the new Parliament. These transferred powers are not listed or defined but the practical effect is that the Northern Ireland Parliament can legislate on such matters, 'exclusively relating to Northern Ireland', as manpower, education, industry, transport, housing and the variety of other matters which comprise the activities of a modern State.

It is within this framework that the 'independent' nature of Northern Ireland government statistics has developed. But the independence is independence of control, not of form, which, through the link with parallel policies, generally follows the form of statistics in Great Britain.

Statistics are collected both through statutory and voluntary procedures. The main statutory powers emanate from the Statistics of Trade Act (Northern Ireland), 1949, although various other acts have sections which relate to the collection of statistics—for example, the Industrial Training Act (Northern Ireland), 1964. The Statistics of Trade Act (Northern Ireland) differs from the 1947 Act of the United Kingdom Parliament in two main respects. First, the power to collect statistics under the Act is given to one department alone, the Ministry of Commerce, there being no section equivalent to Section 16 in the 1947 Act. Secondly, the information which may be requested under the Act is set out in schedules to the Act, and there are some differences from the 1947 Act.

As far as possible the statistics are compiled to ensure comparability with the corresponding data for Great Britain and, in most cases the forms or schedules are based on those used in Great Britain suitably amended to suit local conditions. In many ways the problems of statistical collection are less in Northern Ireland, for the size of the sectors to be covered is such that it is administratively possible, at relatively low cost, to cover either the whole of a sector or a large sample. On the other hand, certain difficulties are met in Northern Ireland because of its special position. For example, statistics are frequently collected to provide separate Northern Ireland figures for comparison with those produced for Great Britain, whereas if the object had been simply to produce a United Kingdom total the burden on Northern Ireland firms or individuals could have been reduced. Difficulties also arise in publication where there may be only one or two large firms in a particular category; to avoid disclosing information about such firms, the information has to be included in related groups.

The Ministry of Commerce is assisted in its administration of the Act by a statutory body, the Trade Statistics Consultative Committee, composed of business and other interests, which provides advice on new proposals with the particular aim of avoiding an unnecessary burden on those required to provide statistical information. Within Government, co-ordination rests with an inter-departmental committee whose terms of reference are 'to review and co-ordinate the collection, collation and publication of statistics and to ensure that the main government requirements are being met in this field'. There is no Central Statistical Office in Northern Ireland, but the functions of that office are, in general, carried out by the Economic Section of the Ministry of Finance. This Section also publishes, in March and September of each year, the *Digest of Statistics*, which contains all the major statistical data, and, in April of each year, an *Economic Report* on the previous year, which incorporates certain new and non-periodic statistics.

Some indication of what statistics are available and the main contrasts with the position in Great Britain are described below.

Population

Population censuses are normally held at the same time as those in Great Britain (there was an exception in 1966 when the Northern Ireland census was taken in October), but they are not necessarily identical in scope. In 1966, the Northern Ireland census differed from that in Great Britain in not being a sample census, and also in asking fewer questions; for example, questions on occupation, household amenities, ownership and renting of accommodation, cars and garaging, people out of work and higher educational qualifications were not covered.

The Registrar General for Northern Ireland publishes weekly, quarterly and annual reports on vital statistics. The Government Actuary prepares the estimates of the

future population for Northern Ireland as well as those of Great Britain.

Manpower

Estimates of insured employees and civil employment, analysed by industry, are prepared quarterly, on the basis of the exchange of national insurance cards. The number of self-employed is estimated from insurance card data and information from the agricultural censuses, and is not determined through the Census of Population and left unchanged through the intercensal period as in Great Britain. There are no monthly or regular employment returns from employers equivalent to those used in Great Britain and for this reason there are no statistics available on monthly employment levels, on part-time workers, on short-time and overtime and on labour turnover. Employers in manufacturing industry do, however, complete returns covering occupations, but, whereas in Great Britain this data is collected annually through the May enquiry, in Northern Ireland it is collected either at various times in the year through returns made to the Ministry of Health and Social Services under the Industrial Training Act (Northern Ireland), 1964, or in May where no Training Board exists. The use of this machinery avoids duplication of demands on industry, allows more detailed appraisal of manpower/training requirements, and facilitates the extension of the occupational analysis beyond the manufacturing industry sector.

Unemployment and unfilled vacancies statistics are compiled for the same date each month and on the same basis as in Great Britain. The smaller area of Northern Ireland makes it possible to have detail by local office area (i.e. employment exchange area) more readily available than in Great Britain, and as employment figures can be estimated by area of residence through an analysis of national insurance cards, it is possible to provide more realistic unemployment/employment relationships.

The sample analysis of insurance cards which is carried out in Great Britain to produce the age breakdown and inter-regional migration of employees is not undertaken in the same form in Northern Ireland. Age distribution data are, however, available and activity rates by age group are calculated. Information on inter-regional migration, or indeed migration from Northern Ireland to countries other than Great Britain, is generally lacking other than through the Census returns.

Incomes

Information on the average earnings of manual workers by industry is collected directly by the Department of Employment and Productivity, but separate figures for Northern Ireland are published. Earnings of manual workers by occupation in the engineering and construction industry have recently begun to be collected within Northern Ireland. Earnings of administrative, technical and clerical employees are collected annually, in October, by the Ministry of Commerce. As a guide to the incomes of all those resident in Northern Ireland, the Economic Section of the Ministry of Finance makes estimates of the total sum of personal incomes, and these are published in the *Digest of Statistics*. Northern Ireland is also included in the Survey of Personal Incomes published by the Inland Revenue.

The 1964 survey of labour costs was not paralleled in Northern Ireland, but the region is participating in the survey covering the same field being undertaken in respect of 1968.

Production and distribution

Annual censuses of production have been carried out since 1949, in respect of firms employing more than 25 persons. More detailed censuses, both in respect of the coverage of firms and the nature of the questions, are undertaken at five-yearly intervals in line with those in Great Britain. The monthly index of production is calculated by the Ministry of Commerce from information which varies according to the industry. In some cases voluntary monthly returns by a sample of firms form the basis.

Since 1966, the index for the construction industry has been based on a quarterly statutory enquiry into work done and orders obtained which is similar to that carried out by the Ministry of Public Building and Works in Great Britain. The full results of this enquiry are compiled and published by the Economic Section of the Ministry of Finance.

The greater emphasis now being given in Great Britain to short-term production statistics, with their implications for future censuses of production, is being closely studied by the Northern Ireland departments concerned, with a view to possible adoption there.

There has been only one Census of Distribution in Northern Ireland—in 1965. The provisional results of this census are available but the full results will not be published before the end of this year. The census covered certain services (motor and motor fuel, catering, laundries, hairdressers, shoe repairers, etc.), as well as the retail trade. Questions were asked about turnover by type of business and goods sold, employment and capital expenditure. Other questions which have been included in comparable censuses in Great Britain, e.g. relating to stocks, were not asked because this was the first enquiry of its kind and an amendment to the Act would have been needed to make them statutory.

No Census of Wholesale Distribution has yet been undertaken. An index of retail sales has been produced for many years and now that it can be related to a Census of Distribution its value has increased. The monthly index of hire purchase transactions by Finance Houses operating in Northern Ireland which is also compiled by the Ministry of Commerce also has value as an economic indicator when related to the index of retail sales.

Although matters affecting external trade are not within the Northern Ireland Government's constitutional powers, export and import statistics are compiled by the Ministry of Commerce. These statistics are produced from information supplied by the Customs and Excise authorities for direct shipments to and from places outside the United Kingdom and by the harbour authorities for movements to and from Great Britain.

As a measurement of the total goods and services produced in Northern Ireland, the Economic Section of the Ministry of Finance has published estimates of the gross domestic product. This is compiled on an output basis, but when the results of the Census of Distribution and Family Expenditure Survey are available, it is hoped that estimates on an expenditure basis may be possible.

Family Expenditure Survey

Up to December 1966, the Family Expenditure Survey was undertaken in Northern Ireland by the Ministry of Health and Social Services on behalf of the Government Social Survey in London and the sample was geared to the requirements of a United Kingdom analysis, and not to produce separate Northern Ireland results. From January 1967, the survey has been taken over by a social survey unit organised within the Economic Section of the Ministry of Finance. The sample has been extended from 130 to some 900 households and it is now envisaged that, in addition to Northern Ireland's inclusion in the United Kingdom results on a proportionate basis (some 250 households), for the purpose of preparing weights for the United Kingdom retail prices index, etc., the full results of the survey in Northern Ireland will be published in a separate report. The form of sample selection differs slightly from that in Great Britain, but the schedules and general approach are identical and the results are processed with the Great Britain data.

Transport

Statistics are available of spending on public roads, vehicle licences current and new registrations, and road accidents. Details of passenger journeys and revenue receipts from road and rail travel are also available. In future the collection of information on receipts from road travel may not be so straightforward when the present system, under which practically all road passenger services are provided by the publicly owned Ulsterbus Ltd., is ended by the issuing of licences to private bus operators. This changeover from a public monopoly to a system of public/private competition has already taken place in respect of road freight operations and in this sector the simple collection of data from one organisation has been replaced by the problems of collecting data from a thousand or more operators. Because these problems have yet to be satisfactorily solved, data on road freight movements are currently not comparable with the statistics procuced by the Ministry of Transport.

OTHER STATISTICS

In other fields the general situation is that statistics are on a par with those produced for Great Britain and are, as a result, often far wider in scope than those produced for regions within Great Britain. The Northern Ireland Ministry of Education publishes two volumes (*Education Statistics*) a year which include details of school population, further and higher education, teachers, types of school and financial data. Comprehensive information, showing activity in the agricultural, forestry and fishing sectors is published in the annual *Statistical Review* compiled by the Northern Ireland Ministry of Agriculture. The *Digest of Statistics* contains tables showing details of expenditure on social services, central and local government income and expenditure on national accounts basis, assets and liabilities of the commercial banks, etc.

In an article of this length it is not possible to set out in detail all the statistical information which is available about Northern Ireland. Enough, however, has probably been said to indicate the scope of the statistical services in the region, the problems which arise in a small area, and the differences from Great Britain statistics. Further detail can be obtained either from the Economic Section of the Ministry of Finance through its co-ordinating links, or direct from the relevant government departments whose staff have co-operated in the preparation of this article.

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Notes on current developments

POPULATION AND VITAL STATISTICS

1966 Sample Census of Population

The second volume of *Economic Activity Tables*, published in June 1968 by the Registrar General for England and Wales, contains further information on occupation, industry and employment status for Great Britain, England and Wales, Scotland, regions and conurbations. In particular, it shows for Great Britain the principal occupations which contribute to each important industry or group of industries, and for each important occupation or group of occupations the principal industries in which people are employed.

The *Workplace/Transport Tables* are published in two separate volumes for England and Wales (and one for Scotland). These give details of the resident population and the population employed in each area; the main workplace movements from one area to another; the main means of transport to work used for such movements and the characteristics of the people in particular streams. Part I was published in June 1968 and Part II is being published in August or September.

Planning the 1971 Census of Population

The first field test, referred to on page 1.13 of *Statistical News* No. 1, was carried out in ten areas in England and Wales and ten in Scotland on 28th/29th April and is now being evaluated. The aim was

> to test the efficiency of a revised instruction book, and training system, both for controlling officers and for enumerators; to assess the workload of enumerators;
>
> to try out some changes in procedure involving grid referencing, return of questionnaires by post and a sampling method;
>
> to try out forms of wording for questions on new topics.

A further test is being planned for 1969.

The Advisory Panel of Census Users met in June to advise on topics to be included in the 1971 Census, and Government departments are also meeting to discuss their needs. The topics must be settled in the near future and it is hoped to decide on the questions early in the autumn.

Migration

The *Quarterly Return* No. 477 includes detailed tabulations of migration into and out from the United Kingdom during 1967 by country of last or intended future residence, citizenship, age, occupation, sex and marital status and for 1964 to 1967 by the first three variables. These statistics are based on the International Passenger Survey which came into effective operation in January 1964. This continuing sample survey conducted by the Government Social Survey for the Board of Trade covers passenger movements on all the principal air and sea routes of the United Kingdom, except those to and from the Irish Republic. The actual proportion of passengers sampled varies between ½ per cent and 7 per cent according to the type of route and because of the size of the sample estimates for small groups are reliable only within broad statistical limits.

The Registrar General's *Statistical Review of England and Wales for 1963, Part III, Commentary* contains a description of the International Passenger Survey.

Mortality

The *Quarterly Return* No. 477 also includes deaths in Greater London by cause and age, and infant mortality in the regions and large towns during 1967. The introduction of the Eighth Revision of the International Classification of Diseases will necessitate some changes in the lists of causes of death employed in some of the Registrar General's tabulations and the opportunity is being taken for a general review of the content and presentation of mortality tables. During the current period Table VII (Accidental deaths) appears in amended form in this *Quarterly Return*.

SOCIAL CONDITIONS

Occupational pensioners registered for work

Earlier this year a report of the National Insurance Advisory Committee on the *Question of the Conditions for Unemployment Benefit and Contribution Credits for Occupational Pensioners* was published (Cmnd. 3545, HMSO, Price 3s. 3d.). The Committee had been asked in 1966, by the then Minister of Pensions and National Insurance, to consider whether additional conditions for the receipt of unemployment benefit and for crediting of

contributions for unemployment should be introduced for claimants who had retired from their regular occupation and who had an occupational pension.

The committee's report contains an appendix summarising an enquiry into the employment position and prospects of occupational pensioners registered for work which was carried out in 1966 by the Ministry of Social Security with the assistance of the Ministry of Labour.

The enquiry covered 4,567 men (i.e. a 10 per cent sample) aged at least 60 but under 65 who were claiming unemployment benefit on 25th July 1966 or, having exhausted their entitlement to benefit, were claiming contribution credits at Employment Exchanges. It indicated that there were some 24,000 occupational pensioners in the age group registered for work at exchanges in Great Britain.

The findings of the enquiry are summarised under the following main headings:

numbers of occupational pensioners and amounts of their pensions;

their claims for unemployment benefit;

reasons for giving up regular occupation;

work required and prospects of employment;

employment since retirement;

main occupations and occupations for which registered;

area distribution.

It should be noted that the enquiry did not relate to occupational pensioners who were not registering for work.

Social security

Since *Social Security Statistics* was published in 1961, as No. 5 in Guides to Official Sources, there have been some changes in conditions for receipt of national insurance benefits and, of course, rates of benefit have increased. These changes have had some effect on the statistics produced by the Ministry of Social Security but, in broad outline, the systems and methods described in the guide are still operative. It is hoped in forthcoming issues of *Statistical News* to draw attention to the more important changes which have taken place. There is some limit to the amount of revision of existing practices which should be done at this point in time because of the Government's current review of the national insurance schemes.

One of the more important recent changes which coincided with the setting up of the Ministry of Social Security was the introduction of the supplementary benefit scheme, under the Ministry of Social Security Act 1966, to replace the former national assistance scheme. An article about supplementary benefit statistics will appear in a future issue of *Statistical News*.

Meanwhile, the Ministry's annual reports for 1966 and 1967 provide a good source of some of the main statistics about social security benefits. They contain an appendix on statistics describing, in general terms, the methods employed, publications, etc., followed by tabulations covering a range of subjects. The tables are in groups covering national insurance schemes, war pensions, supplementary benefits, finance and adjudication and historical tables. More detail about war pensions appears in the separate *Report on War Pensioners*.

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Redistribution of income

The Family Expenditure Survey, which has been carried out by the Government Social Survey on behalf of the Department of Employment and Productivity on a continuous basis since 1957, provides information which has been used to estimate the incidence of taxes and social service benefits on households of different types and with different incomes, and to measure the consequent changes in the distribution of income in the United Kingdom.

A comprehensive account of the early work in this field was presented by J. L. Nicholson (now Adviser on Economic Matters to the Ministry of Social Security) to the 1961 conference of the International Association for Research in Income and Wealth. Subsequent articles describing the main results for the years 1957, 1959 and 1961 to 1966 appeared in *Economic Trends*, November 1962, February 1964, August 1966, February 1968 and July 1968. This last article gave similar but more detailed results for households with low incomes.

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HEALTH

Survey of the disabled

The Government Social Survey is preparing to carry out, on behalf of the Ministry of Health, the Scottish Home and Health Department and the Ministry of Social Security, a survey of the disabled. The Ministry of Housing and Local Government, the Department of Employment and Productivity and the Department of

Education and Science are also interested in questions being put in the survey.

The object is to estimate the numbers, geographical distribution, social characteristics and need for help—or further help—from the social services of people in Great Britain aged 16 and upward who are living at home and who are substantially and permanently handicapped, from whatever cause. Special attention will be given to certain age groups and to people of any age with very severe handicaps.

A postal questionnaire will be sent to 250,000 households. From 100,000 of these all people having a handicap will be considered for interview; the other 150,000 will be used to extend the sample of the numerically small group of severely disabled. A pilot postal enquiry has been successfully completed and pilot interviews are in progress.

The Survey is under the charge of Miss Amelia Harris of the Government Social Survey. A novel feature is that the survey will incorporate a test of motor disability devised by Mrs. Margot Jefferys of the Social Research Unit of Bedford College, in collaboration with Dr. M. D. Warren of London University and Dr. J. B. Millard, Consultant in Physical Medicine to the North East Metropolitan Hospital Board. In addition to the test, data will be collected, by interview, on the cause, duration and treatment of the disablement, what effect it has had on the informant's ability to work, and particularly whether he is still able to use any qualifications or skills acquired before or after his disablement. Enquiry will be made into the informant's need of help from other people in the day to day activities of ordinary life. Performance of household duties will also be investigated, as will housing conditions, financial circumstances, limitation of social activities and use being made of welfare services. An indication will be sought as to what more could be done to enable the disabled person to lead as full a life as possible.

Fieldwork on the main survey will start at the end of September 1968 and is expected to be completed by the end of January 1969.

Hospital in-patient enquiry

Report on Hospital In-patient Enquiry for the year 1964, Part I, Tables was published in January 1968. Similar statistics for 1965 will be published in July. This enquiry is based upon a one in ten sample of in-patient records from national health service hospitals in England and Wales with the exception of those treating psychiatric diseases, including sub-normality. The enquiry data relate to hospital discharges and deaths during the year and not to individual patients, i.e. patients discharged more than once during a calendar year may be included in the sample upon each discharge.

The purpose of the enquiry is twofold:

morbidity assessment—to provide information about illness among patients admitted to hospital, as a guide to morbidity occurrence in the community;

administrative use—to provide information about hospital services in terms of the characteristics of patients and their diseases, for example, the extent to which persons aged 65 and over are nursed in geriatric or acute departments, the regional comparisons of waiting time for admission, length of stay and use of services for groups of diseases, and an analysis of discharges and deaths by source of admission.

Reference

Report on Hospital In-patient Enquiry for the year 1965, Part 1, Tables, prepared jointly by the Ministry of Health and the General Register Office (HMSO), July 1968 (Price £1 3s. 6d. net).

Cancer

The *Registrar General's Statistical Review of England and Wales for 1962–64, Cancer Supplement* describes the new cases of cancer registered in England and Wales in 1962, 1963 and 1964, under the cancer registration scheme. The method of collecting data from hospital case notes, and the extent to which it is analysed locally, varies among the different Registries, but in every case a uniform abstract card is completed and sent to the General Register Office for analysis.

The tables analyse registrations and the relevant rates by age, sex, site of tumour, region of residence, and residence in urban or rural areas.

Published by HMSO, July 1968 (Price 12s. 6d. net).

Work of 'junior' doctors

The Ministry of Health is carrying out a study of the organisation of the work of 'junior' hospital doctors, i.e. those in grades of limited tenure. This study is in two parts:

a detailed study in eleven hospitals of 'junior' doctors who hold general surgical, general medical, and casualty or accident and emergency appointments;

a questionnaire addressed to 'junior' doctors in 100 hospitals.

The first part is being carried out by the N.H.S. Central O. & M. Unit which is a branch of the Statistics and Research Division and the second part by the Ministry's Statistics Division.

A computer for a hospital

The Ministry of Health has recently authorised the Board of Governors of Kings College Hospital to place an order for a medium to large computer installation to operate in Kings College Hospital at Denmark Hill. The computer will be in the ICT 1905 series and will have several magnetic tapes and disc files as well as the usual peripheral equipment but, in particular, it will work

largely in real time with remote access terminals, some of which will be teleprinters and some visual display units. A relatively modest number of these will be installed in the first instance but if the project is successful it is expected that there will be a rapid extension and that a considerable number of terminals will eventually be attached to the computer.

The basic idea of this computer installation, which is being regarded as experimental in nature, is that the patient's record is an analogue of the patient himself. This record will be the heart of the computer system and events relating to the patient such as his appointments in out-patients department, his addition to the in-patient waiting list, requests for and records of pathology tests, X-rays, etc. and the clinicians' diagnoses and other comments on the case will be processed and recorded in the computer in real time as they occur. By this means it is hoped that communications within the hospital will be improved and that records will be available immediately wherever required. At the same time it will be possible for the computer to apply numerous aids to the clinical and other activities of the hospital, for instance, in checking the safety or feasibility of a drug prescription.

However, although the primary purpose of this computer is as a real time machine helping a large proportion of the hospital staff in their day-to-day administrations to patients, it has obvious statistical implications. When such a computer has been operational for some time it will clearly hold a vast amount of detailed information about patients, past and present. With this a wide variety of statistical work will be possible, aimed to improve both administrative and clinical efficiency and also to provide a valuable research tool. For this purpose it will clearly be necessary to have facilities to extract readily and easily given parameters about patients satisfying given criteria.

Detailed planning on these aspects has barely commenced but it is visualised that such a programme would produce material in a standard form and that there would be a series of standard statistical programmes so written as to pick up their data in this standard form. By this means it would be relatively easy for anyone concerned to specify the statistical material in which he was interested and the one or more statistical techniques he wished to see applied to it and then to receive the statistical results without either himself, or others, having to undertake custom built programming for his particular needs.

HOUSING

Current trends in housing progress

A review of the main trends in housing progress since the publication of *The Housing Programme 1965 to 1970* (Cmnd. 2838) appeared in the May 1968 issue of *Economic Trends*. The article notes the main characteristics of each sector in the period under review. It describes how the public sector programme is controlled and outlines the methods used in short term forecasting.

The main phases of private housing progress since November 1965 are noted, with a detailed analysis of performance in each phase. The role of house mortgage loans both as indicators and as determinants of future private housing progress is outlined. Finally, some consideration is given to housing progress in the wider context, in particular in relation to housing need, to changes in tenure and to rising prices.

House condition surveys

A description of the 1967 House Condition Survey in England and Wales with its objectives and main results, was published in the May 1968 issue of *Economic Trends*. Tables show the estimated condition of the stock of dwellings in England and Wales by area, tenure, gross value, lack of amenities and cost of repair, similar analyses of dwellings lacking basic amenities, and certain other information. Details were given of the sampling method, the collection of the information and the editing, processing and tabulation. An assessment was also made of the reliability of the results. Other figures obtained from this survey have been published in *Housing Statistics, Great Britain*, No. 9, July 1968.

Similar surveys in the Merseyside and Tyneside conurbations, mentioned in the first issue of *Statistical News*, have now gone into the field.

New information on housing

New estimates of the stock of dwellings in Great Britain have been prepared on the basis of the 1966 sample Census of Population results. Estimates at April 1966 have been adjusted to allow for under-enumeration in the Census and for the tenure distribution of dwellings enumerated as vacant or with the occupier absent. In addition an estimate of 'reasonably separate' dwellings has been included to provide a more realistic picture of the availability of adequate housing. These are dwellings which, though not separate by the strict census definition, provide satisfactory accommodation with the exclusive use of all basic amenities. Stock changes have been estimated up to December 1967 by region and conurbation and by tenure. Figures are published in *Housing Statistics*, No. 9.

Figures of housing progress in the statistical subdivisions of the economic planning regions of England and Wales have been published for the first time in *Local Housing Statistics*, No. 6. Starts and completions during 1966 and 1967 are shown for the public and private sectors, and for each sub-division private completions as a percentage of total completions, total

completions as a percentage of the total for England and Wales, and total completions per 1,000 population.

The distribution of construction costs of local authority and new town dwellings in England and Wales has been analysed regionally for two-storey three-bedroom houses, flats in 6 to 8 storeys, and flats in 12 to 14 storeys approved during the year ended 30th June 1967. (Previously only average costs have been published.) Results are published in *Housing Statistics*, No. 9.

The average prices of three-bedroom semi-detached houses are shown for the first time in *Housing Statistics*, No. 9. They relate to owner-occupied houses sold in 1966, and are analysed by region and type of area and by the age of the house. Also published for the first time are the average prices of new dwellings on which the index of Unit values in Building Society mortgages (shown in the regular tables) is based.

A summary of the results of the private sector housing site enquiry, mentioned in the first issue of *Statistical News*, has been published in *Housing Statistics*, No. 9 and details for most local authority areas in England and Wales (excluding Greater London) are given in *Local Housing Statistics*, No. 6.

Additional information about loans for house purchase by insurance companies is published in *Housing Statistics*, No. 9. This includes the number and amount of loans on new and existing dwellings and the distribution of mortgages by purchase price.

The average weekly rents of local authority dwellings in England and Wales from 1961 to 1967 have also been published for the first time in *Housing Statistics*, No. 9.

References

Housing Statistics, Great Britain (Quarterly), No. 9 (HMSO), July 1968 (Price 8s. 6d. net).

Local Housing Statistics, England and Wales (Quarterly), No. 6 (HMSO) July 1968 (Price 9s. 6d. net).

Housing: Hansard references

The following information, not published elsewhere, has appeared in Hansard in the second quarter of 1968 up to and including 14th June:

Compulsory purchase orders. The percentage of submitted orders which has been the subject of appeal (Answer No. 822) and the percentage of houses designated as unfit in such orders which were re-classified as fit (Answer No. 823). 9th April 1968.

Option mortgage scheme. The percentage of new and existing borrowers choosing option mortgages (Answer Nos. 839 and 914). 29th April and 7th May 1968.

Housing Corporation. The amount of loans paid to housing societies (Answer No. 776), the number of dwellings in completed schemes (Answer No. 782) and the amount of interest due to the Exchequer (Answer No. 773). 2nd April 1968.

Housing stock and housing need. An estimate of the current housing need compared with the number of existing dwellings (Answer No. 1063). 14th April 1968.

EDUCATION

Pupils and teachers in schools

Statistics of Education 1967, Volume 1, Schools (July 1968) includes statistics of pupils and teachers in schools at January 1967. It shows the continuing tendency for pupils to stay at school beyond school-leaving age (over 30 per cent of 16-year-olds were in schools in 1967 compared with less than 20 per cent in 1958) and the continuing switch from science studies in the sixth form. The results of a full count of immigrant children in maintained schools are given; there were 184,000 immigrant children in maintained schools, representing $2\frac{1}{2}$ per cent of the total pupils. Revised projections of the school population show the total number of pupils in schools rising from just under 8 million in 1967 to over 10 million by 1977, compared with fewer than $7\frac{1}{2}$ million in 1957.

An additional table has been added to this volume to give details, for each Local Education Authority area, of the distribution of 13-year-olds between various types of schools (modern, grammar, comprehensive, etc.) together with percentages indicating the extent of staying on to 16 and to 17 for each Authority. This information was previously published in the Department of Education and Science *List 69* which has now been discontinued; the last issue of *List 69* was published in November 1966. Other series which were previously included in *List 69* will be published in *Statistics of Education and Science Volume 5, Finance and Awards.*

Reference

Local Education Authorities 1964–65: Secondary education; awards to students; entries to Colleges of Education. *List 69*, (HMSO) (Price 5s. 6d. net).

The school curriculum and the deployment of teachers

The first in a new series of special statistical reports by the Department of Education and Science arises from an enquiry into the Curriculum and Deployment of Teachers in Secondary Schools undertaken in the autumn of 1965. These special reports, to be published from time to time, will deal with enquiries which do not fall within the regular collection of statistics. The first volume deals with the qualifications and deployment of teaching staff and the teaching of individual subjects. The second volume, to be published later, will deal with pupils' curricula.

Questionnaires were sent to a 5 per cent sample of maintained secondary modern schools and to 10 per cent of other types of maintained secondary schools, direct grant grammar schools and independent secondary

schools recognised as efficient. The method of enquiry was to ask each teacher, whether full-time or part-time, in the selected schools to complete a return showing his or her qualifications (including the main subjects studied), the subject(s) he or she teaches to each group of pupils, and, for each subject and group of pupils the duration of the tuition within a cycle of the school time-table. For this purpose the individual pupils making up each group were identified by code numbers. From these returns it has been possible not only to analyse the timetables of the teaching staff in the selected schools, but also to reconstruct the curriculum of individual pupils.

Some 11,600 full-time teachers and 1,900 part-time teachers participated in the enquiry. The results show the following distribution of teaching time in different types of school.

Distribution of teaching time — Percentages

	Maintained schools				Direct grant and independent efficient schools
	Modern	Grammar	Comprehensive	All types	
Mathematics	12·4	13·0	11·4	12·5	12·7
Other science subjects ...	8·1	18·1	11·4	11·3	18·3
English	15·3	11·5	12·0	13·9	10·8
Other languages and literature	2·5	18·2	8·8	7·7	21·4
Geography, economics and history	10·6	13·1	10·6	11·5	13·9
Music, drama and visual arts...	11·4	8·1	10·5	10·3	9·0
Other subjects(*a*)	39·7	18·0	35·3	32·8	13·9
Total	100·0	100·0	100·0	100·0	100·0

(*a*) Including physical education, religious instruction, handicrafts, and technical, domestic and commercial subjects.

A large part of the first volume is devoted to two complementary topics: firstly an analysis of the teaching and other duties of teachers who had qualifications in particular subjects, and secondly an analysis of the qualifications of teachers who provided the tuition in particular subjects in each year of the course in various types of school.

Reference

Statistics of Education, Special Series No. 1: Survey of the Curriculum and Deployment of Teachers (Secondary Schools), 1965–66, Part 1: Teachers, (HMSO) (to be published).

Enquiry into student progress 1968

The University Grants Committee have published under the above title the outcome of an enquiry by universities in Great Britain into the progress of those undergraduates who would normally have been expected to graduate in the summer of 1966. It gives figures for individual universities, with analyses between men and women, students of home and overseas origin, and different lengths of course and subject groups of study. For those leaving without a degree it gives the time when they left and reasons for leaving.

Of the 35,386 students in this survey 77·7 per cent obtained a first degree within the normal period, a further 7·8 per cent one year later, and 1·2 per cent had been readmitted to university for further study. The remaining 13·3 per cent who left without obtaining a first degree was made up of 1·4 per cent who failed at their degree examinations, 9·5 per cent who left for academic reasons during the course, and 2·4 per cent who withdrew because of illness or for disciplinary or other reasons.

University statistics

Statistics were published in April 1968 of students, staff and finance for universities in Great Britain for the academic year 1965–66, including figures for individual university institutions. It will be the last set of annual statistics to be prepared by the University Grants Committee in White Paper format. The U.G.C. will issue the 1966–67 statistics later in the year in *Statistics of Education* format.

Reference

Returns from universities and university colleges 1965–66, Cmnd. 3586 (HMSO), April 1968 (Price £1 net).

Statistics of education in developing countries

A recent UNESCO study by W. L. Kendall, Chief Statistician, Ministry of Overseas Development, indicates what is needed as a minimum to ensure the adequate provision of education statistics in developing countries. It deals with the problems of collecting statistics as well as simple procedures for presenting and analysing them. The study was discussed at the Regional Seminar on Educational Statistics for Africa organised by UNESCO at Yaoundé, December 1966.

Reference

Statistics of Education in Developing Countries, UNESCO, 1968.

MANPOWER

Surveys of professional engineers

When the Ministry of Technology was formed in October 1964 it was given as a statutory duty a special responsibility for professional engineers. In 1965 the Ministry of Technology and the Council of Engineering Institutions (C.E.I.), newly established under Royal Charter, decided that more facts were needed about professional engineers, their qualifications, work and income, and it was decided to conduct a sample survey in 1966 as a joint venture.

The Secretaries of the Institutions had been collaborating for some time in building a system of integrated stock and flow data with consistent definitions. These

data are being used to construct, for each engineering discipline, a manpower series which provides a basis for research and forecasting. The data on incomes from the 1966 survey were planned as a further stage in the assembly of integrated data for the engineering profession. Each engineer was asked whether his job was administrative or managerial; what his type of work was; and what was his level of engineering responsibility.

Universe. Ideally the sample should have been drawn from the total population of qualified engineers in the United Kingdom. In practice, this is not possible and the sampling frame used was the home membership lists of the fourteen engineering institutions. These cover roughly 80 per cent of those with fully professional qualifications in the United Kingdom.

Size of sample. Data were required for groups of engineering institutions, for age groups and for headings in the Standard Industrial Classification. As some of these were subdivided to show university graduates and non-graduates and 'corporate' and 'graduate' members of the institutions, it was decided that 25,000 questionnaires were the minimum for calculating medians and quartiles.

Response. The number of blank questionnaires returned and those to which no reply was received amounted to 3,422 (13·7 per cent). Of the returned questionnaires 2,164 had to be rejected—those from overseas engineers who had not been excluded at the initial stage, students and trainees, retired engineers, and so on. Replies from semi-retired engineers were retained, although their answers to the question about incomes were discarded. This left 19,428 questionnaires to be analysed.

Results of the 1966 survey. A selection of the results was published jointly by the Ministry and the C.E.I. in *The Survey of Professional Engineers 1966*. A further selection of the data is to be published in the second volume of *Statistics of Science and Technology*.

Arrangements for the 1968 survey. The survey of professional engineering manpower is being repeated in 1968 and will again be a joint C.E.I./Ministry of Technology project. This will enable a full study to be made of the changes occurring in these two years. The Federation of European National Associations of Engineers has recommended a survey on similar lines in other member countries and by 1970, when the next OECD conference on this topic is planned, it is hoped that comparable material may be available from a number of European countries.

The Ministry of Technology has received a number of requests for information, for example on the number of engineers in traffic engineering or in computer technology and the number who have undergone industrial or post-experience training courses to become familiar with modern developments in specialist and management fields. Additional questions, one on area of technology and one on training courses, have been designed to give this information. A further question on unemployment and time spent at present level is intended to throw light on the employment situation of engineers, particularly in the older age groups.

References

Statistics of Science and Technology 1968 (HMSO) (to be published).

The Survey of Professional Engineers 1966 (HMSO) 1967 (Price 8s. 6d. net).

Survey of scientists 1968

The survey of scientists now being undertaken by the five scientific societies has been planned by their Joint Secretaries' Committee in consultation with the Ministry of Technology and the C.E.I. The questionnaire used for the survey of scientists follows the same basic pattern and uses the same definitions as the survey of engineers.

As a result of collaboration between the Ministry of Technology, the C.E.I. and the scientific societies, a direct comparison of salaries will be possible by age, function and employer.

The Brain Drain

The Ministry of Technology prepares annual estimates of persons with qualifications in engineering, technology and science who enter or leave the United Kingdom for a period of a year or more. These estimates are used in studies of manpower with technological and scientific qualifications and also provided the statistical background for *The Brain Drain*, the report (the Jones Report) of the Working Group on Migration appointed by the Committee on Manpower Resources for Science and Technology.

Definitions. An emigrant is defined as a person who goes abroad intending to stay away for a year or more. Similarly an immigrant is a person who comes to this country intending to stay for a year or more. This definition is used in international studies such as that now being undertaken by the OECD. It includes graduates going abroad for research or further study, graduates taking short-time posts or undertaking short-term contracts, visitors and travellers making extended visits abroad and, finally, those who leave this country intending to make their home abroad.

Sources and methods. The data used for these estimates are not obtained from a specially designed series of surveys but are collected from many sources with differing definitions and coverage. As a result data for different groups of migrants suffer from some lack of comparability. However, a point to remember in appraising statistics in this field is that migration is itself an imprecise concept. The only thing that distinguishes a long-term visitor from a 'migrant' is intention, which can change over time.

Statistics are collected from the sources indicated below:

annual returns made by the professional engineering and scientific institutions;

First Employment of University Graduates—1961/62 to 1965/66, University Grants Committee;

movement of university teaching staff overseas—University Grants Committee;

emigration from and immigration into the aviation and electronic industries—Ministry of Technology;

Emigration of Scientists from the United Kingdom—(engineers and scientists with doctorates, leaving the universities 1952 to 1962)—Council of the Royal Society;

migration by the long sea routes to and from countries outside Europe, 1958 to 1963—Board of Trade and General Register Office;

nominal roll of assisted immigrants to Australia by sea and air—Commonwealth Relations Office;

immigrants to Canada—Department of Citizenship and Immigration of Canada;

immigrants with professional occupations admitted to U.S.A.—United States Department of Justice. Surveys of Science Resources Series, N.S.F. 67-3.

vouchers for Commonwealth immigrants—Department of Employment and Productivity;

qualified engineers and scientists going to posts in developing countries for technical assistance—Department of Overseas Development;

Census of Population 1966, in which questions on qualifications and country of birth were included.

Emigration. Separate figures are prepared for each subject of qualification or, failing that, for separate scientific or engineering occupations and, for the purpose of the estimates, the fourteen subject groupings distinguished in the 1961 Census of Scientific and Technological Qualifications were used.

Despite the very substantial amount of information, some gaps remain. In particular the estimates of the number of former immigrants from Commonwealth countries returning home were originally made from the information obtained from the sea manifests, which are no longer available; from 1964 onwards the number of returning residents has been assumed to remain at about the 1963 level.

Immigration. There are no comparable figures of graduates or persons with equivalent qualifications who enter this country, whether they are U.K. citizens or graduates from the Commonwealth. Data of immigration or qualified persons by the long sea routes were available up to 1963 but were discontinued thereafter.

From 1964 onwards, data from the sea manifests have been discontinued and estimates can no longer be made from that source. However a number of the professional scientific and engineering institutions have provided data on the immigration of their members, parallel to those which they have provided for emigration. These data do not cover the whole field nor do they cover non-members, but they have enabled rough estimates to be made of the overall level of the return flow.

Special tabulations relating to immigrants with engineering, technological and scientific qualifications, using data from the 1966 Sample Census of Population, will soon be available. These have been designed to provide a check on the estimates of immigration in 1965. As soon as these tabulations become available, an updated and corrected series of estimates will be published.

Reference

The Brain Drain, Report of the Working Group on Migration, Cmnd. 3417 (HMSO), October 1967 (Price 11s. 0d. net).

Seasonally adjusted statistics of employment vacancies

The Department of Employment and Productivity has introduced a revised seasonally adjusted series, from July 1958, of the number of vacancies of adults (aged 18 and over) notified by employers to Employment Exchanges which were unfilled on the monthly count dates. The method of seasonal adjustment is similar to that used by the Department for the statistics of registered wholly unemployed. This was described in the *Ministry of Labour Gazette*, May 1968, pages 391–3.

Local area unemployment percentage rates

Unemployed persons tend to register for employment at Employment Exchanges and Youth Employment Offices in their *areas of residence*. On the other hand, the annual (June) estimates of employees, on which unemployment percentage rates are based, relate to *areas of workplace*. Such rates are thus only meaningful if the area is a relatively self-contained travel-to-work area. A revised list of such areas, comprising one or several neighbouring Employment Exchange areas has been prepared by the Department of Employment and Productivity, using Census of Population data on travel to work. Unemployment percentage rates from July 1968 onwards are available only for these areas. There are 465 such areas in Great Britain, of which 295 are individual Employment Exchange areas and one is the Greater London area combined with a few fringe Exchange areas. In some cases, although the name of the area is the same as that of its predecessor, its boundaries are different and so the percentage rates are not directly comparable with those previously published.

Area of employment

The Department of Employment and Productivity has made arrangements to obtain more reliable estimates of employees analysed by area of employment in June 1968. They will relate to Employment Exchange areas or groups of such areas which form a more or less self-contained travel-to-work area and be analysed by sex and industry. These detailed analyses of the employment estimates are based mainly on counts of national insurance cards of Class I contributors which are exchanged in June, July and August and are then given an industrial classification; together with information about all such cards held at the beginning of June by the many employers who render voluntary returns.

The arrangements hitherto have not provided sufficiently reliable area statistics to meet the growing needs arising particularly from the development of economic planning. The main reason is that about 3 million employees are now covered by arrangements for centralised exchanges of cards, under which many employers with employees in several different areas exchange the cards all together at one local office of the Ministry of Social Security, irrespective of the areas in which the employees are employed. Hitherto, although information about the geographical distribution of a large number of such employees has been supplied each year by employers, it has been far from comprehensive. For some others, it was known that they were employed outside the area of card-exchange but their area of employment was not known: they were conventionally included in the estimates for the region of card-exchange but had to be omitted from local area estimates. Any employees for whom no such information was available had to be assumed, rightly or wrongly, to be employed in the area of card-exchange. In order to compile improved estimates to meet the important needs, it has thus become necessary to obtain more information from employers about the geographical distribution of the total number of their employees by sex and by industry. On the new returns this year, employers are consequently providing separate figures for each establishment or outstation, by address.

PRODUCTION AND DISTRIBUTION

Input-output statistics

A detailed input-output analysis of the U.K. economy was scheduled for 1963 based on the detailed census of production for that year. As an interim measure an analysis for 1963, partly updated from the last detailed analysis for 1954, was published in the August 1966 issue of *Economic Trends* and in the National Income Blue Book for that year. This interim analysis has been carried further in an article by Mr. D. C. Upton of the Central Statistical Office published in the August issue of *Economic Trends* 1968. In this latest analysis the number of industry groups is increased from 14 to 28 and the analysis of imports is disaggregated to show their industry of origin and destination, thus giving a matrix of import usage. Most of the increase in the number of industries comes from breaking down the services industry group into rail, road, other transport, communications, distribution and other services. The statistics for this sector of the domestic economy are very limited in comparison with manufacturing and agriculture, and the above represents an important step in micro-analysis of the services sector.

Of the tables presented, the first is a transactions matrix of the production of the domestic economy and the disposal of the product to final demand. Tables calculated from the inversion of this matrix then show the contributions of each of the 28 industry groups to the final output of commodities and the composition of this output in terms of the primary inputs (that is gross profits, wages and salaries, net taxes on expenditure and imports). The 'true' contribution of each industry to exports in the form of net output exported is also shown. Two further tables analyse the composition of the different forms of final demand in terms of each industry's net output, imports and taxes on expenditure; and in terms of primary inputs. These tables can be used to study the industrial composition of output and final demand in 1963 and to analyse the effects of changes in composition, including price changes; such changes may result, for example, from increases in wages and salaries, import prices and changes in taxes on expenditure.

Productive potential

An article by J. R. Shepherd in the August 1968 issue of *Economic Trends* describes the model now used in the Treasury for analysing short-term movements in total employment and unemployment and estimating current rates of growth in productive potential. This is essentially an amended version of the model which first appeared in the *National Institute Economic Review* for August 1964. Given the movement of total output and of the population available for work, equations are derived which lead to predictions of the movement of employment and unemployment. Productive potential is here defined entirely in terms of the labour market constraints: its growth is measured by the rate at which output would expand if the calculated level of unemployment remained constant. It is emphasized that the equations are intended to provide a tool for short-term analysis and forecasting and not to throw light on the fundamental determinants of economic growth. Moreover there are usually reasons, at any point of time, for

expecting future developments to depart from relationships estimated from past statistics.

Fuel and power

The 1967 edition of the *Ministry of Power Statistical Digest* is due to be published in August. In common with previous issues most of the tables in the *Digest* give statistics relating to individual fuels, but there has been further expansion of the 'fuel consumption' section in which consumption statistics for the various fuels are brought together for each sector of consumption so allowing comparisons of demand from between fuels, and aggregation of the total demand, in each sector. The expansion of this section of the *Digest* also reflects the increasing inter-action of the various fuels on each other which is of particular importance in forecasting the demand for energy.

The consumption statistics in this section are given in three separate ways. In the first the original units of measurement appropriate for each fuel are used. In the others the figures are converted and aggregated on two different bases; the first of these shows the fuel consumption in terms of million tons of coal equivalent (the primary *fuel input basis*), the second in million therms (*heat supplied basis*). The three different bases are required to meet the different purposes for which the tables may be used. The coal equivalent measure, which was the first method of aggregation to be published, indicates the demand that each consuming sector places on the primary fuels (coal, oil, natural gas, nuclear and hydro-electricity). Thus the domestic consumption of electricity, for example, is measured in terms of the total amount of coal, or coal equivalent of other primary fuel, needed to generate the electricity used for domestic purposes. Losses incurred in the production and distribution of energy are, therefore, attributed to the consuming sector. In the second method of aggregation only the thermal content of the fuels actually delivered to the final consumers is taken into account. The result of the different approaches is that the relative weights of the fuels are quite different in the two methods of aggregation.

The coal equivalent method of aggregation was appropriate for many purposes when only two main primary fuels (coal and petroleum, with coal predominating) were involved, but it is a less useful approach now that nuclear electricity and natural gas are growing in importance as primary energy sources. The primary fuel input basis and the heat supplied basis are not, together or separately, entirely sufficient for all analytical purposes. Sometimes it is necessary to make use of a third method of aggregation—*useful heat basis*. This takes into account the efficiency of the appliances that use the fuels and is the most satisfactory for reviewing heat requirements of consumers. Unfortunately precise data on average utilisation efficiencies are not readily obtainable and tables expressing consumption in these terms have not so far been prepared, although work is in progress to provide estimates of useful heat (and also of money values of fuel used) which can be used where required.

Other new material introduced into the *Digest* this year includes—

charts showing some of the more important fuel statistics in graphical form;

the distribution of industrial consumers according to the combined quantities of coal and equivalent liquid fuels consumed—this table is designed to supplement the separate distributions for coal and liquid fuels which have been included in previous issues;

the number of N.C.B. mines in operation and the numbers closed in each area during the years 1964–1967;

the distribution of N.C.B. mines in operation in 1966/67 according to the number of wage earners employed at the end of the year, and of average output per manshift during the year;

estimates of certain key Area production and productivity statistics for several recent past years on the basis of the N.C.B.'s new Area structure; (owing to lack of comparable data for past periods on the new Area structure, the previous tables on the old Divisional basis have also been retained;)

electricity and gas available, adjusted for seasonal and temperature/weather variations;

the movement within the United Kingdom of crude and processed oils and refined petroleum products analysed by method of transport;

in the natural gas section, a map of the transmission system and the principal gas fields, and a table showing a summary of the supply and disposal of indigenous and imported natural gas. This section will be further expanded as natural gas becomes more significant.

Included with the *Digest* is a short questionnaire asking users to suggest any changes which would make the publication more useful from their point of view. As it is an annual publication it does not contain all the short-term statistics which are available. Many of the constituent series are released to the Press throughout the year and/or published in the *Monthly Digest of Statistics*, but a number of other series are also available on request from the Statistics Division, Ministry of Power, Thames House South, Millbank, London, S.W.1.

Reference

Ministry of Power Statistical Digest 1967 (HMSO), August 1968 (Price £2 5s. 0d. net).

Electricity sales

In their Annual Reports for 1967/68, Electricity Boards in England and Wales have revised the basis on which electricity sales are stated. Previously, virtually all published figures of electricity sold by public supply authorities have been on a basis of those units billed to consumers during the period concerned. All consumers classified as domestic or farm or combined domestic/commercial and many commercial consumers are catered for on a cyclic billing system, i.e. the reading of meters is not at a quarter's end but at quarterly intervals spread cyclically. In consequence, therefore, sales of electricity on a billed basis during a quarterly period are the aggregate of sales to some consumers for the three months ended the first day of the quarter, some for the period ended the second day and so on. Sales figures for longer periods are aggregates of quarterly figures. Sales to most industrial consumers and the remaining commercial consumers are normally dealt with by a regular monthly billing cycle.

From 1967/68 onwards, electricity sales statistics will reflect the true sales in the period concerned. This will be achieved by making an adjustment to the billed sales to allow (*a*) for the estimated consumption carried over from the previous calendar quarter and (*b*) for the estimated consumption of units remaining unread at the end of the quarter. The appropriate adjustment can be calculated, as the number of units of electricity available for sale by the Area Boards is known for each calendar quarter. Furthermore, the statement of units sold in a given period will now be compatible with other statistics for the period.

It is not the intention to make any adjustment to past figures. However, the difference between unit sales on the billed basis in 1966/67 and those on the revised basis is insignificant so that comparisons between 1966/67 and 1967/68 will be therefore only marginally affected despite the change in the basis of calculation.

Table processing system for industrial statistics

The Industrial Statistics Branch of the Ministry of Technology have developed a suite of generalised programmes, known as the Table Processing System (TPS), designed to handle the data arising from their comprehensive and specialised inquiries to firms in the mechanical and engineering industry. It is concerned firstly with checking and filing data, largely numerical; secondly with a number of common operations which have to be performed on the data, particularly with aggregation to produce summary tables, an operation which generally involves a complex matching and linking process; and thirdly, maintaining files in time series order for analytical purposes.

The typical input is a completed form containing several tables of numbers, the Mark I programme being limited to a maximum of 450 cells of integer data, grouped into a maximum of five tables. There are no restrictions (other than that implicit in the 450 cell limit) on the size of individual tables. Development will allow decimal and alphanumeric input to the main files and will remove the restriction to five tables.

To specify a new inquiry and to allow the system to handle new types of forms requires simply the completion of an Inquiry Specification form, a task of less than an hour which requires no computer knowledge.

The file maintenance programmes, and also a number of supplementary programmes associated with the final stage of aggregation, are now working. They exploit both prior knowledge about the internal relationships of the data and empirical knowledge derived from past history to provide powerful checks on accuracy. The main programmes to use the files are now under test.

The system has been written in UNIVAC COBOL for application on the Ministry's Univac 1108 computer at the National Engineering Laboratory at East Kilbride, but with the characteristics of other COBOL dialects in mind. In consequence conversion to any other contemporary computer is likely to be a straightforward task.

Further information can be obtained from Stats F, Industrial Statistics Branch, Ministry of Technology, Kingsgate House, Victoria Street, London, S.W.1.

TRANSPORT

Publication of transport statistics

The Ministry of Transport is considering making changes in its present statistical publications and would welcome suggestions from interested users on changes they would like to see.

Requests for the Ministry to publish motor vehicle statistics which distinguish makes and models are already being considered both for new vehicle registrations reported month by month and for the annual censuses of motor vehicles. Details of other suggestions in respect of regular publications, on general matters or particular points, should be sent to the Director of Statistics (SA 4), Ministry of Transport, St. Christopher House, Southwark Street, London, S.E.1.

At present the Ministry has three main statistical publications:

Passenger Transport in Great Britain (published annually since the first issue for 1962) presents statistics on inland passenger travel by rail, road and air, including the use made of private road vehicles. The figures show, *inter alia*, numbers of vehicles, vehicle miles run, numbers of journeys, fares and receipts, as well as estimates of the total passenger-miles travelled. The latest issue (HMSO, price 7s. net or 7s. 5d. including postage) contains figures to 1966.

Highway Statistics (published annually since the first issue for 1963) contains statistics for Great Britain on numbers of road motor vehicles currently licensed and newly registered, together with estimates of road traffic and figures on road mileage and road expenditure. The statistics include, *inter alia*, estimates of the volume of freight and of passengers carried. The latest issue (HMSO, price 10s. 6d. net or 10s. 11d. including postage) contains figures to 1966.

Road Accidents (published annually in its present form since the issue for 1951) contains detailed analyses of all reported road accidents in Great Britain involving personal injury. The statistics show numbers of accidents and numbers of casualties (fatal, serious and slight). The latest issue for 1966 (HMSO, price 7s. net or 7s. 5d. including postage) is published jointly by the Ministry of Transport, the Scottish Development Department and the Welsh Office.

In addition to these publications and reports on specific inquiries (e.g. the *Survey of Road Goods Transport, 1962*), regular statistical press notices are issued on road accidents (monthly) and new motor vehicle registrations (monthly) and the summary results of the annual censuses of motor vehicles. Copies of these press notices, which contain additional details to the summaries published in the *Monthly Digest of Statistics* can be made available.

Survey of road goods transport 1967/68

The Ministry of Transport conducted a Survey of Road Goods Transport in Great Britain starting in July 1967 and continuing through to May 1968. Operators whose vehicles were selected were asked to complete a form giving details of each vehicle and its use during one selected week.

It will be some time before the full range of information produced by the Survey can be processed and published but it has been decided to make some preliminary data available quickly. Tabulations relating to June, July and August 1967 will, it is hoped, be produced fairly soon. In order to give even quicker access to some of the information, particulars of journeys made and loads carried in these three months of the Survey have been put on magnetic tape, and it is intended to make copies of the tape available to the public at an approximate charge of £200 each.

About one hundred thousand journeys are covered, and the information for each includes the origin, destination, mileage and the nature of the goods carried. There is also load information relating to each journey: unlike the other data, this is not the actual information as recorded by the operator, but is the actual load multiplied by a factor, varying according to the relevant sampling fraction, in such a way that classification and aggregation of the journeys will produce estimates of the appropriate total amounts of goods carried by all vehicles in the period. For example, tables could be compiled of the estimated tonnages and ton mileages of goods of various descriptions carried between given origins and destinations and in the country as a whole, or analyses of tonnage and ton mileage by length of haul, or the daily weight of goods moving between particular places by road.

The method of presentation, however, makes it impossible for members of the public to estimate the loads carried on particular journeys. Moreover, no information is given on the tapes about the size or ownership of vehicles, so that it will not be possible to isolate information leading to identification of vehicles. The restrictions on disclosure will therefore be observed, while the maximum possible amount of information is made available, and purchasers will be told that the data are suitable only for statistical purposes.

HOME AND OVERSEAS FINANCE

Local authority loan debt

A further survey in the triennial series of inquiries into the outstanding amounts of the loan debt of local authorities is currently being carried out. It will provide information for local authorities in England, Wales and Northern Ireland at 31st March 1968 and for local authorities in Scotland at 15th May 1968.

The survey covers some 1,800 authorities and asks for information about (*a*) the outstanding levels of loan debt analysed into the following types:

temporary debt
revenue balances temporarily used for capital purposes
securities, other than bonds, quoted on stock exchanges
negotiable bonds
Public Works Loan Board mortgages
advances from own superannuation funds
advances from internal funds
other bonds, mortgages, loans, etc.

with each type of debt further analysed according to maturity; and (*b*) an analysis of the following sources of longer-term borrowing:

direct borrowing from abroad
banking sector
other financial institutions
nationalised industries and other public corporations
other companies, including co-operative societies
other local authorities
persons and unincorporated businesses
friendly societies, etc.
other.

A similar survey was last held in 1965 and summaries of the results were published in the December 1965 issue of *Financial Statistics*.

Stock exchange turnover in British government stocks

The *Bank of England Quarterly Bulletin* for March 1968 contains a new analysis (with an introductory note) of quarterly turnover in British government stocks on the London stock exchange by main type of holder—official holders, banks, the discount market, other financial institutions and other holders. The analysis shows short-dated stocks (up to five years to maturity) and other stocks separately, and runs from the second quarter of 1966 to the third quarter of 1967. The series is being continued in the *Bulletin's* statistical annex.

Off-prints of the introductory note and table and copies of the *Bulletin* can be obtained free of charge from the Economic Intelligence Department, Bank of England, London, E.C.2.

Sector financing accounts

The Bank of England have constructed a new set of sector financing accounts for calendar years 1952–66. These accounts analyse the financial transactions of the five domestic sectors (public, personal, industrial and commercial companies, banking and other financial institutions) and of the overseas sector, and indicate how these transactions are linked with changes in income and expenditure and in the balance of payments. Previously, a comprehensive set of accounts showing separately the personal sector, industrial and commercial companies and 'other financial institutions' was not available for years before 1960.

The new accounts were published in the December 1967 issue of the *Bank of England Quarterly Bulletin*. Notes on sources and definitions are provided but there is no other analysis or comment. There is inevitably an element of estimation in the figures, particularly for the earlier years; but it is considered that they are reliable enough to enable the main trends and cyclical changes to be distinguished.

Figures for 1967, together with a commentary, are given in the June issue of the *Bulletin* as part of a regular series of annual and quarterly analyses of financial statistics.

Off-prints of the articles referred to above and copies of the *Bank of England Quarterly Bulletin* can be obtained free of charge from the Economic Intelligence Department, Bank of England, London, E.C.2.

Invisible earnings

Additional detail of invisible earnings will be given in this year's issue of *United Kingdom Balance of Payments 1968*, to be published by the C.S.O. in September. An article describing developments in statistics of invisibles is planned for the November 1968 issue of *Statistical News*. The new figures and the developments planned reflect the recommendations on statistics in *Britain's Invisible Earnings* (British National Export Council, 1967).

NATIONAL INCOME

National accounts statistics: Sources and methods

The national accounts are central to the analysis of the economic situation and most forecasting and national planning is cast in terms of the national accounting framework. In September the Central Statistical Office is bringing out a new book which describes the structure of the official national accounts and the preparation of the estimates included in them. The aim is to show how the estimates fit into the national accounting framework and to indicate the source of the information. It will be an essential guide to all those interested in using the figures for analysing economic developments and for forecasting. And it will be of special value to teachers and students of economics.

The national accounts estimates are compiled and published by the Central Statistical Office but they are to a large extent derived from the statistical work of other government departments and the Bank of England. A wide range of statistical material is drawn upon and is described in this book. Many branches of the government statistical service have also contributed extensively to its preparation.

The book will be a companion volume to the official statistical publications which are prepared both quarterly and annually; where the quarterly and annual data differ, both are described. The description follows the arrangement of the tables in the annual Blue Book, *National Income and Expenditure*, published in September. The Blue Book is the main annual publication which contains the most detailed presentation of the accounts. Preliminary estimates of the main tables are published in the White Paper presented to Parliament just before the Budget in March or April. Selected tables from the Blue Book are also published in the *Annual Abstract of Statistics*.

The quarterly national accounts, which are in the same form as the main summary tables in the Blue Book, are published with a commentary in the January, April, July and October issues of *Economic Trends*. A summary, with estimates of the main aggregates, is published as a press release some two weeks beforehand. The main quarterly tables are also included each month in the *Monthly Digest of Statistics*. Additional detail on the quarterly capital accounts and all the quarterly

financial accounts are also published each month in *Financial Statistics*.

The first description of the national income statistics —*National Income Statistics: Sources and Methods*— was published by the Central Statistical Office in 1956. In the twelve years since that book was published many changes have been made and the amount of published information has been greatly expanded. The annual Blue Book remains the basic publication but it has grown from the 53 tables of the 1955 Blue Book described in that volume to the 80 tables of the 1967 Blue Book described in the new book. The first major change in this period was the inclusion of estimates of capital consumption in the 1956 Blue Book; since 1964 estimates of capital stock have also been given. The other major change has been the incorporation of financial accounts within the system. More important, outside of the Blue Book a system of quarterly accounts has been built up which includes all the basic summary tables; and the main quarterly series are published on a seasonally adjusted as well as an unadjusted basis. An associated development was the publication in 1961 of the first official detailed input-output tables, for 1954, which are consistent with the national accounts.

The plan of the new book follows closely that of its predecessor. Two introductory chapters provide a description of the main concepts underlying the United Kingdom official statistics. There follows a short survey of the estimates of the national income aggregates at current and constant prices (Chapter III). This chapter also includes a section describing the methods of seasonal adjustment used in the quarterly accounts. Chapter IV provides a description of the various national accounts publications and includes a description of the first summary input-output tables for 1963. Subsequent chapters cover separately the accounts for each sector of the economy—the personal sector, companies, public corporations, central government and local authorities. A chapter covers the accounts for public authorities and the public sector and includes a detailed description of the composition of the estimates of public expenditure. Two chapters are devoted to the estimates of capital formation in fixed assets and in stocks. Another chapter describes the financial accounts and defines the various types of financial assets which are distinguished. The final chapter describes the treatment of international transactions and sets out the relationship between the domestic accounts and the balance of payments accounts.

The description given relates to the national accounts as presented in the 1967 Blue Book. Subsequent developments up to the beginning of 1968 have been noted as far as possible. The national accounts are continually being developed as new items have to be provided for, additional information becomes available, and methods of estimation are improved. It is therefore inevitable that a description of this kind is overtaken by events. As in the past the notes to each Blue Book will bring up to date the descriptions given in *Sources and Methods*.

Reference

National Accounts Statistics: Sources and Methods, Edited by Rita Maurice, Studies in Official Statistics No. 13 (HMSO), 1968 (Price £2 5s. 0d. net).

PRICES

Cost-of-Living Advisory Committee Report

The following statement was made in a written answer by the Secretary of State for Employment and Productivity.

The Cost-of-Living Advisory Committee . . . was asked to re-examine the desirability of publishing retail prices indices for special social and income groups and by regions and to consider again the treatment of owner-occupiers' housing costs and the possibility of including meals bought and consumed outside the home among the price indicators used for the Index of Retail Prices.

The main conclusions and recommendations are:

First, two special retail prices indices should be computed and published for one-person and two-person 'pensioner' households at present excluded from the weighting pattern of the Index of Retail Prices. These two indices should exclude housing costs and should be published as quarterly averages only.

Second, there is no strong case at present for compiling indices for any other special social or income groups, though the possibility of compiling an index for low-income households with three or more children should be further considered after practical experience has been obtained of the working of the proposed new pensioner indices.

Third, whether reliable retail price indices for regions can be compiled at reasonable cost requires a detailed study of the technical problems involved. The Committee recommends that the Department of Employment and Productivity should accept the responsibility for initiating such a detailed study as soon as possible, in consultation with other Government Departments concerned.

Fourth, the Committee was not able to suggest any improvement, at present, in the existing methods of treating owner-occupier housing costs and recommend that the existing methods should be continued.

Fifth, meals bought and consumed outside the home should be included among the price indicators used in the index. This recommendation was submitted in an interim report, was accepted and has already been implemented.

Sixth, the Committee examined a number of

detailed criticisms of the method of compiling the index and has made some suggestions for improvement. The Committee's general conclusion is that in its present form the index is working well and can be accepted with confidence as a satisfactory measure of changes in the average level of retail prices.

The Government accept the Committee's recommendations and steps will be taken to implement them as soon as this can be done. The detailed study of the technical problems of compiling reliable price indices for regions is beginning immediately.

References

A Report of the Cost of Living Advisory Committee, Cmnd. 3677 (HMSO), July 1968 (Price 3s. 6d. net).

Hansard, 10th July 1968, Written Answers, col. 108.

INTERNATIONAL

16th session of the Conference of European Statisticians

The Conference of European Statisticians was established as a result of two resolutions of the Economic and Social Council of the United Nations encouraging the development of regional statistical activities (Resolution 149 (VII) B in 1948 and Resolution 231 (IX) B in 1949). Like the Conference of Asian and of African Statisticians, it derives its authority from the resolutions of the Economic and Social Council for regional co-operation on statistical matters. It works under the sponsorship of the Statistical Commission of the United Nations, and of the Economic Commission for Europe. Plenary sessions take place annually and working groups and groups of rapporteurs are appointed to undertake studies in a variety of statistical subjects.

At the sixteenth session in Geneva from 17th–21st June 1968, 26 of the 28 member countries of the Economic Commission for Europe were represented. The United Kingdom representatives at this session were Professor C. A. Moser (Director of the Central Statistical Office) and Mr. J. N. C. Hancock (Central Statistical Office). Participants from the following agencies were present: International Labour Organisation, Food and Agriculture Organisation, United Nations Educational, Scientific and Cultural Organisation, World Health Organisation and the contracting parties to the GATT. The meeting was also attended by a representative of the International Statistical Institute. At the invitation of the Secretariat members of the staffs of the Council for Mutual Economic Assistance, the Organisation for Economic Co-operation and Development, the Statistical Office of the European Communities and the European Free Trade Association participated.

The agenda included many reports from working groups of the Conference which had considered a wide range of types of statistics in the period since the fifteenth plenary session of the Conference in June 1967. In addition the Conference gave considerable attention to, and agreed on, a programme of work for the five years 1968/69 to 1972/73.

Many participants at the sixteenth session of the Conference felt that at its annual sessions the Conference did not have sufficient time to discuss important and urgent problems which are the direct concern of directors of national statistical offices. It was felt that an effort should be made to organise the sessions in such a way that the time spent on the discussion of reports of its working groups, etc. could be reduced, so that a greater part of the sessions could be devoted to the fuller discussion of large and urgent questions.

Of particular interest was a discussion on an integrated system of demographic and social statistics. The Conference agreed that this was a subject of current interest to many countries, and that work should be started as soon as possible. However it is also a complex and potentially vast subject, the central issues of which are not yet fully clarified. The Conference discussed the objectives, scope and nature of the work needed in this field and several aims were distinguished during the discussion. A central objective was to produce an integrated system for social statistics, within which classifications, definitions, concepts, etc. could be developed as soon as possible along uniform lines. Such a system would be a major instrument for co-ordinating the collection of social statistics. At substantive level, the Conference felt that the main aim should be one leading to more adequate and comprehensive measures of social conditions, and of the links between economic and social developments. The proposed system should include capital and current indicators of changes in ways of living and should possibly cover indicators at macro and at micro level; indeed one of its main elements should be to illuminate the links between changes at national, regional, household and individual level. The Conference invited a group of rapporteurs (in which the United Kingdom will be a participant) to draw up a paper concerning the objectives, scope and content of the proposed system of statistics for consideration at the seventeenth plenary session of the Conference to be held in 1969.

Main economic indicators: historical statistics

In April the Organisation for Economic Co-operation and Development published, under the above title, the second in the series of historical supplements to *Main Economic Indicators* covering 22 member countries. The tables and charts cover the period 1957–1966 with preliminary data for the first three quarters of 1967. Monthly and quarterly figures are given for many of the series.

Reference

Main economic indicators: Historical series 1957–1966, OECD, 1968.

PUBLICATIONS

Studies in Official Statistics

The list below gives all the titles published as Studies in Official Statistics since they began in 1949. This collection forms a useful set of reference papers on a variety of statistical sources and methods.

No. 1 The interim index of industrial production (May 1949).

2 The index of industrial production (November 1952).

3 National Income Statistics, Sources and Methods (June 1956).

4 The Length of Working Life of Males in Great Britain (January 1959).

5 New Contributions to Economic Statistics (Reprinted from *Economic Trends* 1957–1958) (June 1959).

6 Method of Construction and Calculation of the Index of Retail Prices (February 1967).

7 The Index of Industrial Production: Method of Compilation (January 1960).

8 Input-Output Tables for the United Kingdom, 1954 (July 1961).

9 New Contributions to Economic Statistics (Second Series) (Reprinted from *Economic Trends* 1959–1961) (July 1962).

10 New Contributions to Economic Statistics (Third Series) (Reprinted from *Economic Trends*, February 1962–February 1964) (November 1964).

11 List of Principal Statistical Series Available (September 1965).

12 New Contributions to Economic Statistics (Fourth Series) (Reprinted from *Economic Trends*, August 1964–August 1966) (February 1967).

13 National Accounts Statistics: Sources and Methods. This volume should be available in September 1968. (See the Note on page 2.27.)

The majority of these Studies have been produced by the Central Statistical Office; Nos. 4 and 6 were the work of the Ministry of Labour and No. 8 was prepared jointly by the Board of Trade and the Central Statistical Office.

All of these Studies except Nos. 1 to 5 and No. 9 are in print and available from HMSO.

A separate Research Series is being introduced. No. 1 will be *Duration of Unemployment on the Register of Wholly Unemployed* by R. F. Fowler. This is summarised in the article on page 2.1 of this issue.

Employment & Productivity Gazette

Beginning with the issue for June 1968, the *Ministry of Labour Gazette* has been re-named *Employment & Productivity Gazette*.

Other recent publications

Unit costs in public expenditure

The Management Accounting Unit of the Treasury has brought together in one document a selection of important unit costs in the public sector which have previously been available only from a variety of public sources. Figures are given for housing, schools and colleges of education, universities, roads, hospitals, prisons, police and fire services, and children in care.

The booklet is designed to encourage informed discussion about these costs and to promote cost consciousness and output budgeting. The usefulness of this experiment will be reviewed before deciding to continue or develop it.

Reference

A Selection of Unit Costs in Public Expenditure, H.M. Treasury (HMSO), May 1968 (Price 2s. 6d. net).

Greater London

The 1966 *Annual Abstract of Greater London Statistics* is the first of a series to be produced by the Research and Intelligence Unit of the Greater London Council. It contains 266 tables and four maps.

The report of the Royal Commission on Local Government in Greater London recommended the creation of an Intelligence Department which would serve not only the Council for Greater London but also the London boroughs and make its information available to central government and the general public. The volume is designed to meet the need for a knowledge of present facts about London local government and to make this information readily available. It is designed to do for Greater London what the Central Statistical Office does for the nation in its *Annual Abstract of Statistics*, with emphasis on the local authority field of activity.

The statistics cover a wide field from franchise to finance, with chapters on population and vital statistics, trade, industry and labour, transport and communications, social services, education, town planning and housing, environmental and protective services, cultural and amenity services and an appendix summarising the results of the 1966 census for Greater London.

Reference

Available from the Information Centre, County Hall, London, S.E.1 or H.M. Stationery Office, 49 High Holborn, London, W.C.1, price £2 plus postage (3s. 6d. London postal area, 4s. 6d. elsewhere).

Civil aviation

Regular monthly statistics of activity by United Kingdom airlines and at United Kingdom airports have been on sale in a new Civil Aviation series of publications in the *Business Monitor* series since the beginning of this year. The Board has been consulting with British airlines about extensions to these published statistics. Enquiries about them should be made to the Board of Trade Statistics Division, Shell Mex House, Strand, London, W.C.2 (Telephone: 01–836 1207, Ext. 1772).

GOVERNMENT STATISTICAL SERVICE

Appointments

Professor C. A. Moser has been formally designated Head of the Government Statistical Service.

Some of the appointments mentioned below are consequential on the senior appointments described in the first issue, page 1.33. The C.S.O. appointments largely arise from the development programme referred to in Professor Moser's article in that issue.

Central Statistical Office

Mr. S. F. James, formerly a Chief Statistician in the Board of Inland Revenue has transferred to a Chief Statistician post in the C.S.O. *Mr. R. L. Brown* has been promoted to a new Chief Statistician post in the Research and Special Studies Division. *Mr. R. W. Green*, formerly a Statistician in the Board of Trade and *Mr. D. Harris*, formerly a Statistician on loan to the Treasury from the Board of Trade, have been appointed to Chief Statistician posts. *Dr. J. B. Harding*, Senior Principal Scientific Officer, has joined the office as Head of the Computer and Data Systems Unit.

Ministry of Defence

Mr. E. Jones, formerly a Chief Statistician in the Ministry of Defence (Navy Department) has been appointed Director of Defence Statistics at Under Secretary level.

Board of Inland Revenue

Mr. M. J. Erritt, formerly a Statistician in the Board of Trade, has been appointed to a Chief Statistician post at the Board of Inland Revenue.

Board of Trade

Mr. W. A. Wessell has been promoted to Chief Statistician in the Board of Trade.

Department of Education and Science

Mr. G. M. Goatman has been appointed to a second post of Chief Statistician in the Statistics Division of the Department's Planning Branch. He was previously Statistician at the University Grants Committee and prior to that was for over two years part-time Statistician to the Universities Central Council on Admissions.

Department of Employment and Productivity

Mr. R. Ash has been promoted to Chief Statistician in the Department of Employment and Productivity.

Alphabetical index

The index to *Statistical News* is cumulative. Page numbers are prefixed by the issue number e.g. 1.23 signifies issue number 1, page 23.

Generally speaking articles relating to United Kingdom, Great Britain, England and Wales or covering several geographical groups will not be indexed under these groups, but topics with a significant regional interest will be indicated e.g. regional earnings. Articles and notes dealing particularly with Scottish statistics will be indexed under 'Scotland' as well as the topic, e.g. 'Scotland, population projections', and similarly for Wales and Northern Ireland.

The following conventions have been observed in printing this index: capital letters are used when referring to articles appearing in *Statistical News*; italics are used for the titles of published books or papers.

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