

GENERAL REGISTER OFFICE, LONDON
GENERAL REGISTER OFFICE, EDINBURGH



CENSUS 1961

GREAT BRITAIN

GENERAL REPORT

*(Laid before Parliament pursuant to Section 4 (1),
Census Act, 1920)*

LONDON: HER MAJESTY'S STATIONERY OFFICE

PRICE £2 2s. 6d. NET

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S.O. Code No. 70-929*

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CENSUS 1961, GENERAL REPORT

PART I - ADMINISTRATIVE REPORT

CHAPTER 1

General

Introduction

The Sixteenth Census of the population of England and Wales and of Scotland was taken as at midnight on Sunday, 23rd April 1961. Censuses were taken on the same date by the appropriate authorities in Northern Ireland, the Isle of Man and the Channel Islands. A census was held in the Irish Republic on 9th April 1961.

The previous (Fifteenth) Census for England and Wales and for Scotland was taken in April, 1951. There have been censuses every ten years since the series began in 1801, broken only in 1941 when the war prevented a census being held.

The present report deals with the organisation of the census mainly for England and Wales. It covers the subsequent work of analysis and contains a general statistical appraisal of the results. The report concludes with an account of the main differences between Scotland and England and Wales as regards methods, and procedures. The detailed analyses of the data have been published in a series of separate census reports listed on pages 40-42

The history of census taking in England and Wales from 1801 to 1931 is summarised in a special publication of the Interdepartmental Committee on Social and Economic Research "Guides to Official Sources No. 2, Census Reports of Great Britain 1801 - 1931" (H.M. Stationery Office, 1951). The General Report of each census has given a full description of the particular enumeration parallel to the present Report, with particular reference to new developments. In addition, the General Reports of the censuses of 1901 and 1911 contain full reviews of the censuses taken up to those dates and of the legislation under which they were held.

It will be seen from the following description that the 1961 Census followed the same general plan as earlier enumerations. There were however three major innovations as well as many detailed changes. For the first time, a number, of the census questions were addressed to only a sample of the population; the main operations of processing the results to build up the figures required for the published tabulations were carried out by an electronic computer; the tables for publication were typed automatically from punched cards and then reproduced by photographic methods. These three innovations are discussed in a little more detail later in this chapter.

Authority for the Census

The Census Act, 1920, is a permanent Act making provision for censuses generally. Under this an Order in Council is needed to direct that a census be taken in Great Britain and to define the general scope of the enquiry, and regulations have to be made to enable the Order in Council to be put into effect.

Order in Council

In accordance with the statutory procedure, a draft Order in Council, prescribing the date of the census, the persons by whom and with respect to whom the returns were to be made, and the substance of the questions to be asked, including provision for the introduction of sample methods, was laid before both Houses of Parliament on 8th April, 1960. The Census Act provides for certain subjects of enquiry, but the inclusion of subjects not specifically covered in precise terms has to be confirmed by an affirmative resolution in both Houses. The draft Order was explained fully in the House of Commons on 4th May 1960 (Hansard columns 1181-1198) and accepted without opposition; at the same time the House approved the inclusion of questions about the first or only marriage where this had terminated, about housing tenure, education, scientific and technological qualifications, change of usual residence in past year or duration of stay at present usual residence, these questions being not already specifically authorised by the Act.. There was a general debate about the draft Order in the House of Lords on 1st June 1960, (Hansard columns 196-225) following which the inclusion of these questions was also agreed to. The Census Order, 1960 (S.I. 1960 No. 1062) was made on 23rd June 1960.

Regulations

The detailed machinery for taking the census and the precise forms of return to be used in all cases were prescribed in the Census Regulations, 1960, (S.I. 1960 No. 1175). These were signed by the Minister of Health on 11th July 1960, and laid before Parliament on 18th July. There was no discussion of them in either House.

Planning

Planning began in December 1957 when the first approaches were made to Government Departments to determine the topics to be included in the census. The general planning included drafting the Census Order and Regulations, preparing and printing the schedules, enumeration books and other census forms, and recruiting and instructing local officers.

A small section, in consultation with other departments, concentrated on the revision of the Classification of Occupations.

Other officers considered the machines to be used for processing the results and planned the method of processing from coding, through punched cards, magnetic tape and computer to the form of the tables of results to be published.

Whilst this work was going on a section was set up to plan the division of the country into enumeration districts. Some 50 clerical staff were engaged on this work and completed the job in January 1961.

Questions

The 1951 Census had contained the largest programme of enquiries so far included in a census in England and Wales, though little that was wholly new. The full list of questions for 1961 was somewhat larger than that for 1951, but owing to the introduction of sampling at the enumeration stage, nine out of ten people were asked for far less information than at any previous census this century. The programme of questions was worked out without regard to sampling considerations (which are dealt with later) and all questions were included on their intrinsic merits: there was no extension of the list because of the adoption of sampling in the field.

Questions as to *sex, age, marital condition and relation to head of household* are basic questions and were included much as before.

The question on *usual residence* was first included in 1931 and repeated in 1951 and 1961, but the instructions in 1961 differed in that they required the home address for school children and students who lived away from home during term-time. This question enables allowance to be made for persons enumerated elsewhere in England and Wales when computing the populations of local authority areas, and for these to be reduced in respect of visitors from other parts of the country. It enables tabulations to be made about visitors from countries other than England and Wales. It also provides for tabulations on the ten per cent information to be related more appropriately to the usual residence.

The questions about *birthplace and nationality*, which date back to 1841, were again included. The former was limited to country of birth as the 1951 Census provided extensive tabulations by county of birth and it was considered unnecessary to obtain the same detail on this occasion. In Scotland, however, where the subject is of greater importance, the more detailed question was retained. The nationality question, limited to those born outside the United Kingdom, was unchanged as regards foreign nationalities, but the question now provided for specific mention of various commonwealth countries. Mode of acquisition of citizenship of the United Kingdom and Colonies, i.e. whether by birth or descent, naturalisation, registration or marriage, was obtained as it had been for all those who stated British nationality in 1951.

The questions about *occupation, industry and economic status*, which have been elaborated over many censuses since the first in 1801, were set out in 1961 in a manner which focused attention first on the person's state of employment in the week before census day, i.e. whether employed or self-employed, or if not employed, whether looking for work, sick or retired, or outside the range of employment, as with students, persons engaged on home duties or of independent means. With the main category clear, more detailed questions on present or former occupation, employer and present place of work were asked. Some new questions were added to bring further precision to the enquiry and perhaps to aid the public in finding the appropriate answers. Thus those unable to work through sickness were to be distinguished from those without a job but seeking work. Persons working part-time (both men and women) were asked to state the number of hours worked, and men working part-time were asked to state their previous full-time occupation.

The question about the *age at which full-time education ceased*, first asked in 1951, was repeated, and extended to the population generally instead of being limited to those in employment.

A new question was included at the request of the Minister for Science on the advice of the Advisory Council on Scientific Policy which was primarily designed to establish the location of the country's scientific manpower. The question asked for the *professional qualifications* held and the main branch of science or technology in which the qualifications were held.

There has been a growing demand from universities, local authorities and Government Departments for an enquiry to throw further light on *internal migration* within the country. A new question was included in the 1961 Census to obtain information about the amount, direction and characteristics of population movements within the country and the number of years a person had lived at his usual residence.

Questions about *marriage and children* were again included, as they had been at the 1911 and 1951 Censuses. The former had asked for marriage details for all married women, the latter for all married women under the age of 50. The 1961 Census questions related to all women who were or had been married, and so the extent of the groups questioned was the same as in the 1946 Family Census conducted on behalf of the Royal Commission on Population.' The questions about children were the same as in 1951. It was suggested that the enquiry should extend to the date of birth of each child to give information about birth intervals, as had been done by the Royal Commission, but it was not regarded as practicable within the limits of the census to seek as much detail as the specialised enquiry. The innovation at the 1961 Census, though again this followed the Family Census, was the date of termination of the first or only marriage for women. This enabled statistical use to be made of the family building experience of women whose first or only marriage was terminated by widowhood or divorce after the end of their childbearing life. This is important for estimating the trends in family building over as many generations as possible; there are many widows in the higher age groups, but for considering trends in family building those who did not become widowed until after the end of their childbearing life can be included in the analysis as though they were still married. The 1961 Census thus establishes a full picture of completed as well as current fertility.

In Wales and Monmouthshire the question on the *ability to speak Welsh* was included as it had been at every census since 1891. The question was asked in the same terms as in 1931 and 1951. A similar question on ability to speak Gaelic was included in the census in Scotland.

A question on *place of work* was first included in 1921. It was repeated in 1951 and was again included in 1961 because the study of the relationship between place of residence and place of work has a valuable part to play in local planning. It is appropriate also to tabulate industry figures on a work-place basis.

Questions on *housing and households* have been included in every census since the first in 1801. The information was derived mainly from the record made by the enumerators in the course of the enumeration. In 1961 enumerators were also asked to note whether a building was wholly or partly residential, and whether it contained one or more dwellings.

In 1951 questions on certain *household arrangements* had been included to throw light on housing conditions. These were largely repeated in 1961, with the questions about piped water supply, water closet and fixed bath, but a new question about piped hot water supply was added. The 1951 questions about cooking stove or range and kitchen sink were restricted in 1961 to households sharing structurally separate dwellings in the census sense. As the enumerator had first to apply the definition for a structurally separate dwelling, it was left to him to pursue this enquiry. The information so obtained enabled sharing households under the census definition to be classified according to how far the living accommodation they occupied provided for separate occupation or not.

A question about *housing tenure* was included for the first time in 1961. Householders were required to say whether the accommodation occupied by their household was held by them as owner-occupiers; occupied by them in connection with employment or as part of business premises; rented from a Council (i.e. a local authority) or a New Town Corporation, or a private landlord and in the latter case whether furnished or unfurnished; or occupied on some other terms. In Scotland the Scottish Special Housing Association, the Scottish National Housing Company Limited and the Second Scottish National Housing Company (Housing Trust) Limited were also specifically mentioned.

The *analysis of private households* by size and various characteristics of their members has become increasingly important as a pointer to various social or housing requirements in recent years. In 1951 visitors were excluded from these tabulations, and the improvement to the statistics of bringing in members of households from elsewhere in England and Wales was not thought to be so great as to justify the labour of transferring the particulars in a matching operation to link them with the households to which they belong (even if this had been practicable). In 1961, with the introduction of sampling, the analysis of the composition of private households was on a usual residence rather than an enumerated basis. Accordingly a new question was introduced in 1961, asking for particulars of persons usually living in a household who were absent on census night, to enable them to be included in the various household analyses. The information collected under this head does not affect the main count of population numbers, which is arrived at in the same way as previously, but is being used solely in the analysis of household composition.

The wording of the questions, and the notes for guidance, can be seen on the specimen schedules at pages 208-210. Their effectiveness is discussed in a later chapter which deals with the quality of the 1961 Census data.

Publications

At the time of planning the publications there was every prospect that a scale of publications would be agreed, which would enable all results to be published within 2-3 years of the census. If this were so it was felt that there was no need to produce 1 per cent sample tables such as were produced after the 1951 Census. Apart from this the general pattern of the 1951 publications was followed i.e. reports for each county in turn followed by national volumes dealing with each of the subjects on which enquiry was made at the census. The reasons why it took over 5 years to publish the results instead of the hoped for 2-3 years are discussed on page 12.

As with the census questions there was wide consultation to determine the statistics which were to appear in the tables and the format of each of those tables. Following this consultation detailed specifications were prepared showing the content of each of the statistical cells and following those specifications tables were designed which would present the statistics.

Schedules

The design and presentation of forms for use by the general public require careful consideration if there is to be a reasonable chance of obtaining the results desired. Before the final forms of the 1961 Census schedules had been produced, there had been consultation with the Organisation and Methods Division of the Treasury and several experiments made with different designs to arrive at the forms which it was hoped would give the best results.

The overriding problem was to present all the questions clearly and yet get them on to a sheet of paper that would not frighten the householder by its size. The problem of the size of the full schedule brought about the first departure from previous practice with the introduction of separate leaflets for the sample and non-private household schedules to contain notes of guidance and examples for the person completing the schedule. Size, too, controlled the design of the household schedules which were to be used for sampling. The objective was to produce two forms of household schedule, one containing in addition the questions on a sample basis, so that when folded the linear measurements of the forms would be the same. This was an attempt to make it more difficult for the enumerator to select from his supply a particular type of schedule for a specific household.

The experiment, introduced in 1951, of sub-dividing the spaces provided for the answers to questions, was carried further in the 1961 Census schedules. This saved overall space on the forms but tended to obscure parts of some questions from the person completing the schedule. Thus, for example, there was some failure to respond to all the sub-divisions of the questions relating to married women.

In all, seven different types of schedule were prescribed in the Regulations with four differing leaflets of notes and examples. The types of schedule were:-

Private household schedules

for use in England - E.90 and E.10 (for sample households)

for use in Wales and Monmouthshire - W.90 and W.10 (for sample households).

Institution schedules "I"

for use in hospitals, hotels, boarding schools, etc.

Shipping schedules "S"

for use by masters of vessels in ports and harbours.

Forces schedules "NMA"

for use in military camps and shore establishments.

In addition, translations into Welsh were provided of the schedules W.90 and W.10. Because of the numbers of immigrants from the Commonwealth and foreign nationals in the country, translations of the E.10 schedule and notes were also provided in Italian, Polish and Greek and of the schedule only in Urdu, Hindi and Bengali.

A further factor influencing design of the household schedules was a desire to provide for the eventual removal from completed schedules of as much as possible of the printed questions. These would have no relevance to the processing arrangements which were to follow but their removal would make a considerable reduction in the weight of paper to be handled and the space necessary for storage. This objective was achieved by printing most of the questions in the top three inches of the household schedules and providing perforations below those questions but above the spaces provided for the answers.

The final dimensions of the schedules were not determined until about the middle of 1960. By that time problems of production were requiring urgent settlement. Orders for the printing of the 20 millions of schedules required could not be undertaken lightly. A further factor not fully appreciated at the time was that the paper of the quality needed for the schedules was not readily available and had to be made. In all some 300 tons of paper were used by H.M. Stationery Office to produce the schedules.

Introduction of sampling methods

In 1951 a one per cent sample of all census records was extracted and used to provide preliminary figures on all subjects. In planning the 1961 Census it was decided that in view of the expected faster production of the main census tables the case for a preliminary one per cent sample was small so it was not repeated.

Consideration was then given to the production of census tables on certain topics on a sample basis only, without repetition on a full count basis. The advantages of such sample production are mainly in terms of economy. With sample tabulation the coding and processing burden is reduced with economy of cost and quicker production of results. The main drawback of sample-based figures is their lack of precision, since the true figure can only be estimated within certain limits. A subsidiary difficulty is that an extra element of complication is introduced into the organisation of the census. Topics which involve mainly national rather than local statistics or where the classification is into relatively few groups are therefore candidates for sample tabulation.

Application of these considerations to the census led to the conclusion that the population count, housing statistics, information on sex, age and marital condition and birthplace and nationality, which were needed for every administrative area, would have to be tabulated on a full count basis. On the other hand information on economic activity (occupation, industry, workplace, etc.), education, and household composition was mainly required on a national basis and while migration was of local interest the main classifications were short; these then were suitable for sample treatment. (Fertility was a marginal case; practical considerations eventually led to its allocation to a full count basis). Interested users among Government Departments, such as the Ministry of Housing and Local Government, the Ministry of Labour, the Board of Trade and the Central Statistical Office, were consulted before final decisions were reached.

Another point to be settled was the size of sample needed. The smaller the sample the greater the saving but the less the precision. Given any sample, the administrative cost of sampling was not closely related to the size of sample. A one per cent sample had been used in 1951 but then the sample information was temporary, to be replaced by a full count, whereas in 1961 the sample figures would form the whole of the available census material. Consideration of the proposed tabulations led to the conclusion that a sample of ten per cent would provide data of sufficient precision for the main tables and a sample of this size has the practical advantage that the results can be used as they stand because grossing up consists merely of adding a nought. It should be noted

that in general the proposed tabulations were not tailored to fit the sample but rather the size of sample chosen to fit the tabulation requirements.

The basic unit of census enumeration is the household and there were clear practical advantages in using the same unit as the basis for the sample. Experience with the household sample used in 1951 indicated that this had no significantly adverse effect on the precision of the statistics compared with those derived from a sample of persons. For private households the household was again the sampling unit. An exception had to be made, again as in 1951, for large non-private households, institutions, etc. Such places are sited too irregularly and are too variable in size for a sample based on the household or institution to be sufficiently precise - particularly for local figures. The population enumerated in such places were therefore sampled with the person as the sampling unit.

The final question was the stage at which the sampling was to be operated. The main choice was between a full enumeration followed by sampling within the office and a sample at the enumeration stage obtained by asking only a sample of households to answer the sample questions. The former had certain advantages in giving better control over the sampling operations and simplifying the organisation but it was then felt that these were outweighed by the consideration that it was unreasonable to ask nine tenths of the population for information that would not be used. The opportunity was therefore taken to lessen the burden on the public by limiting the sample questions to those whose information would be used. The device of spreading the sample questions among the households by including one or two of the sample questions on each form was considered but was rejected because this would have made impossible the cross-classifications of information which are one of the most valuable features of the census tabulations.

The introduction of sampling at the enumeration was a new departure which did not operate altogether successfully. The section in Chapter IV on "Validation of the sample" indicates the extent to which the sample was biased.

Introduction of computer

Consideration of a machine to be used for processing the census data began in 1957 when machine manufacturers thought to be interested were invited to put forward proposals. Seven manufacturers recommended the use of computer systems manufactured by themselves; one of them suggested the use of more conventional punched card machinery as an alternative, but their first recommendation was for the computer. It seemed clear from early examination of these proposals that the use of a computer represented the most satisfactory way of carrying out the processing, and attention was turned to choosing the most economical system for the purpose.

It seemed likely that the needs of the census could be met by a relatively small system, not provided with magnetic tape. This would have been considerably cheaper than a system using tape and a full investigation of the possibility was begun. New circumstances, however, arose and the enquiry was never completed.

During 1958 it was decided that an I.B.M. 705 system should be obtained for the use of the Royal Army Pay Corps. The machine was to have magnetic core storage of 40,000 characters backed by a magnetic drum of 60,000 characters and there were to be 10 magnetic tape units available for connection to it at any one time. At that time it was thought that there would be considerable spare capacity on this installation and the General Register Office was asked to consider whether that machine could be used to perform the census processing. As it was a considerably more powerful machine than those which were, currently being considered for the purpose, it then seemed clear that it could do so with much less than full time usage. It was therefore agreed that time on this machine should be made available, and the project to acquire a separate computer for the census work was abandoned. It was necessary to supplement the equipment required for the Pay Corps by obtaining a punch to provide output in punched card form and an additional card reader to permit the feeding in of the large number of cards which had to be punched for the census. The 705 was installed late in 1960 at Worthy Down, near Winchester in Hampshire.

It was also decided that the processing of the Scottish Census data should be carried out on the same machine. The General Register Office would control the machine running, acting as agents for the General Registry Office (Scotland). The latter Department were to arrange for the programmes written for the England and Wales processing to be modified as necessary to enable them to be used for Scottish Gaelic work, and to prepare programmes for the small number of tables required for Scotland only as a result of the extra detail obtained about birthplace.

The use of a computer made it practicable for the first time to have a machine output consisting of the precise figures required for publication, arranged in the way they were wanted. This made it worthwhile to consider producing reports directly by photographic means from machine output, avoiding the laborious setting up and proof-reading stages at which errors inevitably arise. It would have been possible to use the directly printed output of the computer, but it was felt that the quality of this was not up to the standard which was desirable, and it would not have been possible to introduce varying type founts which are considered helpful in conveying emphasis or distinction to the reader. It was therefore decided that the computer output should be by punched cards and that these should be fed to a cardatype machine. This consists of up to four typewriters which, in unison or separately, can be arranged to type the contents of punched cards. The census installation used three typewriters, of which one was fitted with normal roman type, a second with bold face type and the third with italic type. By arranging for them all to type the whole table in their respective founts, and then piecing together parts of their output it was possible to obtain the desired presentation.

As soon as sufficient information was available on the content of the census schedule, work was started on writing the programmes for the computer. The first programmes were completed in early 1960 and testing of them was carried out on an installation in Paris to which several visits were made before the Worthy Down machine was installed.

Assistance to 1961 Census of Distribution

The Report of the Committee on the Censuses of Production and Distribution (Cmd.9276) had suggested in 1954 that the Registrar General should be approached with a view to obtaining a register of distributive establishments at the Census of Population (paragraph 147). This suggestion was examined with the Board of Trade and arrangements were made for enumerators to co-operate in compiling the register. As they had in any case to inspect all premises within their enumeration district to see whether they contained residential accommodation, it was a simple matter for them to record the location, nature of business and name of proprietor, company, etc. for all premises engaged in the retail and building trades. This information was collected by outward inspection of the premises, and was in no way connected with the information obtained on the population census schedules. The operation, which is described more fully below, was of great assistance to the Board of Trade as well as producing a substantial saving over the cost of alternative methods. It passed off smoothly without comment of any kind, and added a little to the fees earned by the census officers and enumerators.

Basis of enumeration

The enumeration has been based on the household since 1841, and with the continued good response from heads of households who must complete the schedule, this method still appears best. It is the duty of the enumerator to deliver a schedule to the head, or person acting as head, of every private household. All schedules were to be completed as at midnight on census day, and then collected by the enumerators on the Monday following, or as soon after as possible. Under this system distribution of schedules and the identification and recording of dwellings and households can be spread over a week or so beforehand. The enumerator has comparatively little to record and so the time he requires to complete the task is less than an interviewer, who has himself to ask all the questions orally, would take. The head of the household can complete the schedule at his convenience and has time to read the form and instructions and to take care over the answers. He may well not be at home when the schedule is delivered or collected but the census is not at the mercy of whatever respondent happens to be at home when the enumerator calls.

The private household may be defined broadly as one or more persons occupying a house or a separate part of a house, flat, apartment, etc. Persons who usually had at least one meal a day provided by the household while in residence were regarded as part of the household. Thus a boarder or a visitor was counted as part of the household, but a lodger who did not eat with the household was regarded as constituting a separate household for census purposes.

Hotel managers, boarding house proprietors, the chief resident officers or other persons for the time being in charge of a hospital, nursing home, sanatorium, hostel or educational establishment, governors of prisons or masters of ships or other vessels were responsible for the enumeration of the persons in their care. The responsibility for enumerating persons in defence establishments, including naval ships (whether serving personnel, civilian employees or dependants), fell to the officer commanding each separate unit. Families living

in married quarters were enumerated as private households on the normal schedules by the census enumerators under arrangements made with the commanding officers. This practice differed from that adopted for the 1951 Census.

Secrecy

The information is collected for statistical purposes only, under a pledge of the strictest secrecy. Every precaution is taken to ensure that everyone concerned in taking the census is made fully aware of this pledge, and signs an undertaking to observe it. There are penalties of a fine and up to two years imprisonment for any breach. This understanding is widely accepted, and has contributed greatly to the trust which the public places in the census.

Separate Returns

While this is sufficient to satisfy the householder in a private household, and usually his immediate family, it could none the less create embarrassment to some individuals to entrust the details of their lives to the heads of boarding houses, hotels and the like. Accordingly provision was made for a person to ask for a separate confidential return, which would go direct to the enumerator and not be seen by the head of the household or establishment; the actual recourse to separate confidential returns was very small, only about 3,500 being required out of 46 million people.

It was hoped to minimise any feelings of embarrassment at direct personal dealings with the enumerator by the choice of enumerators with the ability to inspire trust, and wherever possible their assignment to areas in which they were not likely to be widely known. To a very large extent this was achieved, but in an operation like the census which affects everyone in the country there are bound to be exceptions to every rule. Even the exceptions could be avoided (and some of them were), by use of the post but it was then felt that any general recourse to returning schedules by post might delay the enumeration process, make it more difficult to ensure complete enumeration because checking would be much slower, and make the improvement of inaccurately or incompletely answered schedules a much more time-consuming process.

Publicity

The quality of the census depends not merely upon the powers of compulsion under the Census Act, Order and Regulations, and the administrative machinery set up to carry out the enumeration, but perhaps even more upon a ready co-operation from the public. The census plans therefore included provision for publicity, designed to convince every citizen that the census is essential. The census was presented as a national count which every nation needs for good government, and which brings benefit to all by providing the essential facts upon which national and local plans should be based. The publicity also stressed that no harm could be caused to any individual by answering the questions. The legal sanctions are only there in reserve against those few individuals who make a point of refusing co-operation.

The need for suitable publicity is clear, and attempts were made to gain it through all suitable means, in order that the census and the census particulars should be fully understood throughout the country.

Publicity was sought through the press, broadcasting media, journals and magazines, posters, and an informative booklet; an account of each is given below.

Press

As in 1951, reliance was placed on the news value of the census to gain publicity in the national and local newspapers; there was no paid advertising. The first main contact with the press came with the laying of the Census Order in Parliament. At the time that it was laid, a meeting was held with lobby correspondents to give them information about the scope of the census and to answer any questions that might arise. A similar meeting was held on 18th July, 1960 when the Census Regulations were laid before Parliament. Brief reports of those events appeared in the press and there followed occasional references to the census until January, 1961 when the first real impact on the public was made. That was the occasion for the recruitment of the 70,000 enumerators required.

The notice to the press about recruiting enumerators was timed for release on 9th January when circulars about recruitment were being issued to local officers and when various authorities were issuing instructions to their staffs. Unfortunately, news "leaked" to the press a few days earlier and as a result many applicants arrived at local offices before the offices were equipped to deal with them. The enumerators announcement about recruiting was well covered in the national and, particularly, the local newspapers. It

promoted general comment on the census and served to arouse public interest.

A further stimulus was given at a general press conference held in the General Register Office, Somerset House on 14th March. The occasion was the publication of the booklet on the census but opportunity was taken to emphasise particular aspects of the census and to answer reporters' questions.

In all, there were some 3,000 references to the census in the press and about one third of these were made during the period immediately before the census. But despite this, when enumerators began to deliver their schedules on 15th April, they found that the public had little idea that a census was being taken.

Broadcasting

The vast increase in the number of television receivers and the introduction of commercial television since 1951 made it essential to get some reference to the census on to the television screens. The first approaches to the British Broadcasting Corporation and the Independent Television Authority in October, 1960, brought encouraging replies and guidance on the ways that the census might be covered by television. Two courses were envisaged, the first to show very short films, termed "fillers", between programmes, and second to refer to the census in news bulletins and, particularly during census week, in popular programmes. The fillers were two cartoon films of a minute's and thirty seconds' duration. The films emphasised in a light-hearted style one or two of the more important aspects of the census and were shown frequently during the week of the census. With one exception, the attempt to introduce the census into regular programmes was not successful. The exception was the inclusion of an enumerator in a popular programme ("What's my Line") on Sunday evening, 16th April. The effect of her appearance on the previous evening was to ease the enumerators' job of distributing schedules on the Monday. No longer were there blank, apprehensive and enquiring householders, instead there was ready co-operation when the enumerator called.

The coverage in sound broadcasting was excellent. Items about the census were included in many programmes and a particularly helpful talk was given at mid-day on the 23rd April.

Booklet

In 1951, the booklet entitled "8th April 1951 - The Census Explained" was placed on sale by H.M. Stationery Office and some 40,000 copies were sold. This apparent interest in the census suggested that something similar should be produced for 1961. Accordingly, answers and explanations to general questions about the census were put together into the booklet "Why a Census?" which was sold by H.M.S.O. and priced one shilling. This booklet did not achieve the success of its predecessor in that only about 11,000 copies were sold. The reasons for this are not readily apparent. Good publicity was given to it at the press conference on 14th March (mentioned above) and H.M.S.O. too, gave attractive publicity. Probably the interest after a ten-year gap in census-taking was not so great as after the twenty-year gap which occurred before the 1951 Census. There was possibly lack of public appeal in the booklet's appearance and the date of publication might have been too late to capture interest.

Journals and magazines

In December, 1960, the "Classification of Occupations" which had been compiled by the General Register Office, was published. As there could be only limited interest in this publication the release of information to the press was directed chiefly to medical and sociological Journals.

An attempt was made in the same month to interest the editors of women's magazines in the census generally but more particularly in the questions with which women would be specially concerned. Representatives of several women's magazines were invited to a conference in the General Register Office but only a few were sufficiently interested to attend.

Information about the census was passed to many other magazines and periodicals. As a result, some magazines with large circulation published interesting articles.

Posters

Publicity through the means of posters was directed particularly to factories and businesses employing large numbers of persons. An attractively designed poster was prepared to help employees with the completion of the schedules and to remind them to have the schedule ready for the enumerator when he called to collect it. In particular, help was given on the way in which the questions about occupation and industry were to be answered. Some 100,000 copies were distributed through employers and grateful acknowledgement is made to

the many firms who co-operated by displaying the posters in their premises.

Several other methods were used, besides those described above, to publicise the census. Of interest is the use made by the firm producing crossword puzzles of clues supplied by the General Register Office. Publicity in schools was achieved through the distribution, on request from teachers and others, of some 1,000 specimen schedules.

In all the matters of publicity reliance had to be placed in the abundant goodwill and co-operation of other Departments and organisations. Of particular note was the extensive help given by the Central Office of Information in the production of the cartoon films and the posters and in many other ways. Acknowledgement and appreciation is extended to that Office and to all others who helped.

However, although the actual volume of publicity, especially from the Press, was very considerable, a review of this in retrospect suggests that it was rather patchy in its effect, especially as regards timing. Census items had to fight hard for their lives against the pressure of exciting world events, and were sometimes crowded out from the days and times when their impact could have been most valuable.

Enumeration

The census system aims at the highest possible accuracy in the answers, and requires the enumerator to do more than just deliver and collect the schedule. The efficiency of the system depends on the enumerator carrying out his various duties of collection, scrutiny of schedules and assisting the householder to give proper answers, and accounting for every dwelling and household, as near to census day as possible. Any substantial departure from this would lead to a serious falling off in quality and an added risk of duplication or omission.

The enumeration went smoothly and very little trouble or anxiety was caused in general. In the main the public were co-operative and disposed to give enumerators all the help they could. First reports to come in revealed that many of the public had still not heard of the census, and enumerators in the first days of distribution were called upon to give much more explanation than had been expected.

As census day approached there were about 100 reports to the General Register Office of households who had not yet received schedules; delivery was finally arranged. This continued after census day for a few days, although the emphasis soon shifted to reports of schedules not collected, after the Monday following census day.

The enumeration faced the usual difficulty of any operation based on a house to house visit, (accentuated in the case of a census by the need to complete the operation with a narrow time-bracket), that is, the difficulty of finding anyone at home. Enumeration districts were planned generally to contain fewer households than in 1951 but there were still difficulties in completing the delivery of the schedules.

The enumerators were given a clear weekend in advance of census weekend to assist them to get their distribution and enumeration record complete by the Thursday preceding census day. This left a little time in reserve to deal with difficult cases or to correct mistakes by any enumerator who had not fully grasped the limits of his territory. There were numerous reports calling for last-minute action, but compared with the nation wide scale of the operation, they only covered a very small proportion of the job. All reported difficulty in making contact with householders to collect schedules and most of them had to make repeated visits to some households.

There was little evidence of opposition to the census, and this was generally from isolated individuals. There were enquiries about the need for some questions, especially those about marriage and children. Some opposition was focussed on the questions about marriage and children, especially by bodies concerned with women's rights, not so much because the questions were included but because they related only to women.

All sustained refusals to give information were reported, amounting to perhaps 450 in all out of a total of some 15 million respondents in England and Wales, an insignificant proportion. After correspondence with the General Register Office many of these people returned completed schedules. 96 summonses were eventually Issued, 8 of them being withdrawn before hearing. 87 convictions were secured, one case being dismissed on a technicality. In 1951 there had been 57 convictions.

Refusals were followed up because the aim was to secure a complete enumeration. The number of sustained refusals was not in itself significant as regards the effect on the statistics, but if action had not been

taken there might well be many more at a future census and eventually census statistics would be impaired. About half of the refusals were complete. There were a variety of objections to individual questions, but only nine related their objection to the questions included in the sample.

The Post-enumeration survey

Various attempts have been made at previous censuses to assess the accuracy and completeness of the census enumeration, but these have mostly been indirect and limited in scope. Thus in the 1951 Census analysis a test was made of a small sample taken from the census and matched against the birth registers to assess the accuracy of the statement of age (this is described more fully at page 35 of the 1951 General Report),

Although it was generally felt ~~that~~ the enumeration came very close to complete coverage in England and Wales, it was thought valuable to be in a position to assess this by an objective test. Not only would this be a satisfactory proof of the efficacy of the enumeration methods, and valuable for this alone, but it would also be useful to show the reliability of the census count to local authorities, who have a particular interest in the population estimates founded on the census count because of their importance in the government grant calculations.

It was therefore decided that a post-enumeration survey should be conducted on a sample basis to assess the completeness of the census count of buildings, dwellings, households and population. While organized as a separate operation, it was carried out by census officers and selected enumerators as soon as possible after census day, and therefore was accepted by the public as an integral part of the census enumeration, as indeed it was since it is only a linked test of the working of the main enumeration. It was conducted on an entirely voluntary basis, although under the same pledge of secrecy as the main census, but the response was almost complete.

At the same time it is desirable to ascertain how well the census questions have been understood, and to throw light on this aspect a sub-sample of those included in the coverage check described above were interviewed by the enumerator, who was thereby able to complete a fuller questionnaire covering the same ground as the census questions.

The methods adopted to collect the post-enumeration survey material are described, and the results of the survey are examined and assessed, at page 25 and pages 44-54.

Processing

The main processing of the census results was carried out at Titchfield and Worthy Down, Hampshire, At Titchfield the schedules were examined and the information in them and the enumeration books coded. Some 25 million 80-column cards were punched with the information.

The punched cards were sent 22 miles to the computer installation at Worthy Down. There they were converted to magnetic tape which formed the input for the computer, A highly trained staff prepared programmes of instruction to the computer which produced statistics recorded on punched cards. Back at Titchfield these punched cards were used to produce tables for publication.

Costs

The cost of the census in England and Wales was estimated early in 1960 to be between £2,752,000 and £2,852,000, The final expenditure on the census by the General Register Office was £2,697,000 and by other Departments £400,000, a total of £3,097,000, The details are as follows –

	Estimate	Expenditure
	£	£
Headquarter's Costs	650,000 - 700,000	831,000
Census Advisory Officers	2,000	10,000
Census Officers	245,500	278,000
Enumerators	1,455,000	1,468,000
Ministry of Works		140,000
H.M.S.O. Printing & Stationery	400,000	260,000
Office Machines	to	
	450,000	110,000
War Office - Computer		

	2,752,000	
	to	
	2,852,000	3,097,000

The expenditure includes the costs of the Post-Enumeration Survey, which were not estimated for and amounted to £26,000 of which £10,000 went to the Census Officers and the remainder to selected Enumerators.

Delay in producing results

With the use of a computer it was estimated that all results would be published within 2 years of census day. Actually, although the preliminary report was published within 2 months of census day, the first county report was not published until March 1963, and the national reports were published from September 1964 onwards. It was 4 and a half years before computer running was finished and 5 and a half years before the last tables were published. The delay arose mainly from the combination of two factors, namely lack of experience in processing a large statistical exercise like the census on a computer, and on increasing demand for census statistics throughout the planning and processing stages. This increase in demand was part of a general expansion in the use of statistics for planning and could not properly be resisted; but, coupled with inexperience of computers, it resulted in a serious under-estimation of the number of programmers and the overall computer capacity required.

Programming began in the autumn of 1959 with the object of completing all programmes within 4 years. Eight programmers were trained initially but in 1961 a further 10 were recruited and trained. Eventually 72 man years were spent in programming over a period of six years compared with the original estimate of 32 man years over four years. In addition programming for all the economic activity tabulations was put out to contract. No additional programmers were recruited after 1961 because the long training period necessary before they would become effective would have diverted trained programmers from the main task. Also the computer capacity available was only sufficient to justify the employment of the existing staff.

The amount of computer running time required to process the census was seriously under-estimated. So much so that it was considered that the census could be easily processed by sharing the I.B.M. 705 installed for the Royal Army Pay Corps at Worthy Down. However by 1961 the R.A.P.C.'s own requirements had so far expanded as to exceed the capacity of one machine, and an additional machine was obtained in 1962. Both machines were then worked three shifts a day five days a week for the next eighteen months with occasional weekend working. In the final twelve months a large proportion of the census work was done by continuous shift work at weekends. Eventually some 15,000 hours of computer running time were used for census processing, equivalent to almost 4 years work on a double shift, not including the time spent in processing the main economic activity tabulations. To have completed census processing in 2 and a half years as planned would have required the use of an I.B.M. 705 for three shifts a day throughout the entire period, and a programming team capable of keeping it provided with work.

The position was aggravated by the fact that census processing was the junior partner in a shared arrangement, so that computer running time was not always readily available when required and the most effective use could not always be made of the time when it did become available.

These unforeseen difficulties of using a computer contributed about 16 months delay to the publication programme. The remaining delay was due to quite different factors.

First, the discovery that the ten per cent sample included within the census was biased led to extensive calculations to estimate the effect of the bias. This contributed an additional 3 to 4 months delay. Secondly the time needed to programme and investigate the results of calculations of empirical sampling variances, in order to assess the precision of the results of the ten per cent sample, was much longer than expected, contributing a further 3 months delay to the publication programme.

The experience gained in the course of processing the 1961 Census was, however, invaluable. The lessons learned have been applied to the 1966 Census, with the result that the basic aim of publishing the main results within two years of census day is likely to be met.

CHAPTER 2

Organisation and enumeration

Preparations in General Register Office

(a) Planning enumeration districts

The objective - One of the earliest tasks was that of planning the sizes and boundaries of the smallest areas to be identified at the census - the enumeration districts. Those areas were to be combined into larger areas to form Census Districts and the aggregation of Census Districts formed the country as a whole.

In previous censuses, this work was carried out by local Census Officers, usually the registrars of births, deaths and marriages. It was decided to plan centrally for the 1961 Census, because of the complex nature of this work and the inability, through other commitments, of many registrars to produce an acceptable plan on time.

Planning instructions - The task began in Southport in July 1958. The instructions were to plan enumeration districts so that they contained about 250 households in urban areas (in 1951 this figure was 350); in rural areas the 1951 districts were to be retained unless there were good reasons for changing e.g. considerable building development in the area, or changes in local authority boundaries. During the early planning it was found that registration sub-districts were sometimes too large for efficient control. A new entity, the Census District, was accordingly introduced and limited to 70-90 enumeration districts, about 50,000 population. This meant the combination and re-division of some registration sub-districts to form the new Census Districts.

Recognition of boundaries - As the figures to be produced from the census were to relate to local authority areas, no boundary of an enumeration district could cross that of a local authority ward or civil parish. Thus each ward or civil parish comprised one or more enumeration districts. In a few instances, where population in a civil parish was too small, one enumeration district contained all or part of more than one civil parish but in such cases the enumeration district itself was divided to maintain the distinction between parishes.

Besides local authority boundaries and those of New Towns and conurbation centres, other boundaries were recognised at the request of the London County Council and the Universities of Oxford and Southampton. The effect of this action was to make available figures for the L.C.C. Community Areas and special tracts in Oxford and Southampton.

Materials used - The enumeration and census districts were planned on Ordnance Survey maps to the scale 6 inches to the mile. In densely populated areas, 25 inch maps were used.

The enumeration record books from the 1951 Census gave some indication of the numbers of households in the various parts of the enumeration districts.

These were used to estimate the numbers of households in planning new districts. Most local authorities were very helpful in providing detailed information about development in their areas, which enabled the planners to take into account buildings which had been erected or demolished since the previous census in 1951.

Special enumeration districts - Certain establishments such as hospitals, prisons, military camps, etc., which were expected to house 100 or more persons on census night, were created special enumeration districts and excluded from the contents of the ordinary districts planned as above. This was to avoid overloading districts which were planned on the basis of numbers of ordinary households, and to make them the particular responsibility of the census officer.

Enumeration district boundaries - As each district was planned, a textual description of the boundaries was written and in urban areas a tracing of the boundaries was also provided. The contents of each district in terms of roads, streets, etc., were also listed. The descriptions and tracings were eventually inserted in enumeration record books to enable the enumerator to identify the area for which he was responsible. Copies of these descriptions and lists were made by two "Thermofax" machines which were fast dry-copiers. These copies when assembled provided a complete plan of each census district for the use of census officers.

Allocation of random sample number - The planning staff were responsible also, for assigning a random number from 1 to 10, for the purposes of sampling, to each planned enumeration district. This was done with the use of a table of random numbers.

Effect of central planning - The experiment of planning centrally, in the main, was very successful. There were some difficulties where projected development had not taken place by the date of the census and conversely where there was more housing development, or demolition, than had been anticipated. Although known caravan sites had been noted during the planning it was impossible to forecast how many of the caravans would be occupied on census night. This too, created difficulties for enumerators in some areas. (For checking of plans by census officers see page 20).

(b) Enumeration of special classes

Armed forces - Conferences took place with the Service Departments to discuss the special problems involved in securing complete enumeration of people in defence establishments in the United Kingdom or on board naval vessels. Arrangements were embodied in an Admiralty Fleet Order, a Special Army Council instruction and an Air Ministry Order, for enumerating people in defence establishments (whether serving personnel, civilian employees or dependants) the responsibility falling to the officer commanding each separate unit. Following consultation with the United States Air Force headquarters, responsible officers were appointed in each of the U.S. Air Force bases to enumerate people in those bases.

Where security arrangements permitted, Forces personnel and their dependants living in married quarters within the boundaries of the Forces station were enumerated by local enumerators. These people were therefore excluded from the responsibility of the officer commanding the station. Everyone else within the station was enumerated in consultation with the local census officer, or enumerator.

The Admiralty undertook the enumeration of all naval ships within Home Station limits, the schedules being forwarded direct to the General Register Office, Titchfield.

The schedule used for enumerating members of the Forces omitted questions on relationship to the head of the household (or collective establishment), fertility and migration and the questions about occupation and industry were in a much simplified form. People in married quarters and civilians within Forces establishments were enumerated on household or institution schedules containing a fuller range of questions.

Civilian shipping - People aboard ship were, in the main, enumerated by officers of R.M. Customs and Excise in accordance with an Omnibus Weekly Order issued by that Department amplified by instructions from the Registrar General.

The local Collectors of H.M. Customs and Excise were supplied directly with "s" schedules (i.e. the schedules as used for collective establishments with a few modifications to adapt them particularly for use on ships) and were responsible for their delivery and subsequent collection and despatch to the General Register Office.

The Collectors were instructed to enumerate all vessels in port which were berthed, moored or moving from one berth or mooring to another within the port limits at census midnight. Exceptions to this general instruction were:-

- a) vessels with no sleeping accommodation
- b) H.M. Ships in commission and vessels in Naval Dockyards
- c) ships of foreign navies
- d) vessels which by arrangement were enumerated by the local census officer.

They were also instructed to enumerate any vessel arriving in the port up to 15th May, which had not already been enumerated and which was at census midnight:-

- a) in a British port or anchorage
- b) voyaging between such ports or anchorages; or
- c) on a fishing voyage without touching at a foreign port or a port of the Irish Republic.

Vessels enumerated under (a) were assigned to the port in which they had been at census midnight and for this purpose reciprocal arrangements were made with the other Census Authorities in the United Kingdom the Isle of Man and the Channel Islands, for the exchange of the schedules collected.

Census officers in port areas were given details of the areas for which

Customs Officers would be responsible for enumeration and were directed to confer with the Collectors to ensure that their respective areas of responsibility were clearly defined and understood.

Most of the schedules were returned to the General Register Office on the 29th April; the remainder were sent by the 26th May 1961.

Other special classes

Lighthouses and lightships - Arrangements were made with Trinity House and other lighthouse and lightship authorities for their co-operation in the enumeration of the population of the various lighthouses and vessels under their control. These arrangements applied only where the lightship or lighthouse was inaccessible to the Customs Officers or local enumerators. Where lighthouses were manned on the basis of a 24 hours shift, the staff were enumerated on return to their own homes on Monday 24th April.

The various authorities co-operated further by enumerating also any local inhabitants of the islands on which some of the lighthouses were situated, e.g. a farmer and his family on Flat Holm Island off Cardiff.

Gypsies - Forestry Commission Rangers assisted by enumerating encampments of gypsies and others in the New Forest and Forest of Dean. The local census officers co-operated with the Deputy Surveyors of the Forests in supplying and collecting schedules.

Homeless people - The enumeration of homeless people was undertaken by the police under instructions from the Home Office. Those instructions requested the police to enumerate, on household schedules supplied by the General Register Office, everyone found spending the night of the 23rd April in a barn, shed or kiln, under a railway arch, or on a stairway accessible to the public, or in the open air, and who did not, during the course of the night, go to an institution, shelter or common lodging house. Guidance was also given to the police on what information they should give or attempt to give about homeless people.

The completed schedules were delivered to local police stations and collected by the enumerators.

Security establishments - Special arrangements were made with the Ministry of Aviation to allow enumerators access to security establishments to deliver schedules for people who were living within the boundaries.

Travellers - Arrangements were made with organisations primarily concerned with travel by road, rail, air and water to ensure that travellers were enumerated. A special notice to road and rail travellers asked them to ensure that they were included on the schedule issued to the hotel, house, etc., which was their destination or, if that schedule had already been collected, to get in touch with the local census officer who would arrange for enumeration. If the traveller had already been enumerated before arriving at his or her destination, there was, of course, no action to be taken.

This notice, by co-operation with British Railways and the Road Transport organisations, was issued to everyone who would be travelling at midnight on Census Day.

The Customs Collector at London Airport issued copies of the above notices, to people leaving on internal flights to Glasgow and Belfast and who would be in the air at midnight on Census Day. Had there been any delay in the flights resulting in the passengers spending the night at London Airport, arrangements were made for their inclusion on the schedule issued for enumerating resident staff at the airport.

The various inland waterway authorities co-operated by requesting their lock-keepers and other employees to assist in the enumeration of people on barges or other vessels on canals.

Circuses - Because of the tendency for circuses to travel from one town to another during a Saturday night, arrangements were made with the circus authorities to assist in the enumeration of their travelling employees. Each of the larger circuses was created a special enumeration district (see P. 19) and schedules were issued in one town before the Saturday and collected by the census officer for the town in which the circuses spent Census night.

(c) Liaison with other census authorities

Fullest consultation was maintained with the other census authorities in the United Kingdom in order to secure the maximum degree of uniformity in the census results throughout the area. The Census Act, 1920,

applies to Great Britain, and the Census Order, 1960, directing the 1961 Census to be held, also applied to Great Britain. There was necessarily very close contact with the Registrar General for Scotland, who had a similar responsibility for the census in Scotland, in all the formative stages of census planning.

As a result, the main census schedule was in all essentials the same in England and Wales and Scotland. The schedules in Scotland and Wales contained questions on the speaking of the Gaelic and Welsh languages respectively.

Close contact was also maintained with the census authorities in Northern Ireland, the Isle of Man and the Channel Islands. While local conditions did necessitate some additions to or omissions from the schedules used in those areas, there was no divergence in the essential particulars collected.

Uniform arrangements were made in all areas for dealing with the special classes of population, such as the Armed Forces, seamen, merchant shipping and fishing vessels.

Local organisation

(a) Officers

The Census Regulations, 1960 differed from earlier regulations in that no duties were specifically assigned to any one class of officer. The Act permits the Minister of Health to make regulations "..... requiring superintendent registrars, registrars, and such other persons as may be employed for the purpose of the census, to perform such duties as may be prescribed." In fact, the bulk of the officers employed as census officers were registration officers but the regulations did not impose duties upon registration officers as a whole. Rather they prescribed enumeration districts, census districts and areas and provided for the appointment of officers to supervise each of those districts or areas.

(i) Census advisory officers

In 1951 this title was reserved for those superintendent registrars who voluntarily accepted the honorary title to enable them to give such assistance as they were able to the registrars (census officers) engaged on census duties within their registration district. In 1961, the post was offered to specific superintendent registrars who, it was deemed, would inevitably become involved in the census. The officers who accepted appointment were given specific duties within particular areas and paid for their services. Some 115 superintendent registrars were appointed census advisory officers.

Their duties were

- (a) to recruit, interview and select enumerators and to give them general briefing as to their duties and
- (b) to answer enquiries made to them by the press, local officers or other persons seeking information about the census.

The response of the census advisory officers to their duties was very varied. In a few areas they arranged for the help of interpreters during the enumeration and generally gave valuable assistance to census officers and enumerators. In other areas, there was a feeling amongst census officers that the advisory officers were usurping their functions and consequently co-operation was difficult. The employment of these people as paid officers for a specific job was something of an experiment for this census; generally it was not considered the experiment was successful.

The payment of Census Advisory Officers was calculated on the basis of 7s.6d. for each ordinary enumeration district in the area for which a Census Advisory Officer had accepted responsibility for certain duties.

(ii) Census officers

One of the early decisions necessary was to determine what groups of people should be approached for appointment as census officers. Hitherto, officers in the registration service were appointed in accordance with the regulations which prescribed duties for them as registration officers. The wider scope of the 1960 Regulations meant that some consideration should be given to employment of, for example, officers of local authorities. The burden of the census falls heavily upon registration officers. Their normal registration duties must continue to be discharged at a time of year when those duties are heaviest.

Against this, there are well-established lines of communication between the General Register Office and registration officers, who thus constitute a field force on which local enumeration can be centred. It was decided, therefore, to make the first call on the services of registration officers but to lighten their census duties as much as was possible. Formal letters of appointment to the post of census officer were sent to registration officers in October, 1960. Provision was made with the letters of appointment for officers to give the undertaking required by the Act, i.e. faithfully to perform the duties imposed upon them by the Act and Regulations. Because of the creation of more census districts than there were registration sub-districts and the inability, for one reason or another, of some registration officers to undertake census duties, 81 census officers were appointed from outside the registration service. The task of finding those officers fell to H.M. Inspectors of Registration.

Of the officers appointed from outside the registration service 55 were officers of local authorities; the remainder included retired civil servants and registration officers, a retired brigadier and a retired theatre business manager, 1,200 officers were appointed from the registration service.

1,315 Census Officers were appointed. Payment was based on the following fees -

1. Basic allowance for general duties	£20. 0s. 0d.
2. Allowance for each ordinary enumeration district in the Plan of Division as finally constituted (including the formal appointment of the enumerator)	12s. 6d.
3. Allowance for each Special Enumeration District	£1. 0s. 0d.
4. Allowance to Census Officers, for each ordinary Enumeration District in the Census District, for the recruitment, selection, and general briefing of enumerators. (Payable in districts where no Census Advisory Officer was appointed).	5s. 0d.
5. Allowance for the checking of each Enumeration District in the draft Plan of Division	7s. 6d.
6. Allowance per complete 100 of the population enumerated in a Census District	6s. 0d.

(iii) Enumerators

To those unfamiliar with modern census taking there is a general impression that the enumerator's task is the simple counting of the population through the delivery and collection of forms. This of course was not true of the 1951 enumeration and was even less true for the 1961 Census. The instructions, in fact, were so full and complex that many applicants for the post of enumerator in 1961 rejected the job on sight of the enumerator's instruction book. Not only does the job require the mastery of those detailed instructions but also some measure of clerical ability plus stamina and the physical ability to complete the rounds of the districts from house to house, mostly on foot, in the allotted time.

The task of recruiting enumerators required co-ordinated action in several different fields. Experience has shown that the best people with the qualifications required are those in local authorities, the Civil Service, and the teaching profession. In addition, fair opportunity should be given to qualified people who were unemployed to come forward. Thus all those people, local authority officers, civil servants, teachers and the unemployed, had to be given the opportunity to volunteer and, where necessary, to obtain permission from their employers to devote the time necessary for the enumeration.

Conferences were held with local authority associations and the Ministry of Labour. Co-operation of H.M. Treasury and the Ministry of Education was also sought. As a result circulars calling for people to act as enumerators were sent out early in January to local authorities, Government Departments, local education authorities and employment exchange managers. At the same time local census advisory officers and census officers were given detailed instructions for dealing with applicants.

A public announcement was made in the national and local press on 9th January, 1961 but the news had "leaked" a few days earlier. A flood of applicants came forward in most of the urban areas. In Birmingham, for example, 4,000 applications were received for 1,500 enumerators' posts.

The mass of applications for posts fell heavily on census officers in some town areas. They had neither staff nor equipment to handle all the correspondence arising from applications. Unsuccessful applicants had to be told and some wanted to know why they were unsuccessful. Having decided upon the applicants he required, the census officer was faced with a further round of correspondence to find replacements for those who rejected

the Job on seeing details of the duties involved and particularly the book of instructions. In an average district of some 60 enumeration districts the mere task of assembling and instructing a team of enumerators involved a great many hours' work.

In contrast in some of the London Boroughs local officers were faced with insufficient applicants for the posts available. In rural areas, too, there was some difficulty in finding people willing to serve as enumerators, but many of those who were enumerators in 1951 came forward again. There was one who volunteered to enumerate the people on one of the Islands but declined payment for his services on the grounds that it might compromise his quest for the independence of the Island!

Of the enumerators appointed 35 per cent were local government officers, 27 per cent civil servants and 11 per cent housewives. Some 150 enumerators were aged 70 years or over and one who was aged 83 had served as an enumerator from the 1901 Census onwards.

The form of application for appointment of an enumerator was in two parts. One part provided guidance to applicants on the qualifications needed and the nature of the job and the other part, which was detachable, provided for the formal application and subsequent appointment of the enumerator.

In all, some 68,900 enumerators were appointed. In addition about 100 assistants to enumerators were also employed. The need for such assistants did not become apparent until the week of the census when it was found that projected development in some areas had moved more rapidly than had been estimated producing too many households for coverage by one enumerator.

There was general advice to census officers to avoid the appointment of enumerators in districts where they might have been known to householders. This of course was to recognise the reluctance that some people may feel in making available to someone known to them many personal details about themselves and their families. In some rural areas however, census officers were unable to avoid such appointments. Usually any one who knew an area well enough to seek out every household was well known by the householders. In some urban areas too, by mischance, the enumerator was known to one or more of the residents within the enumeration district. Where complaint was made, permission was given for the householder to return the completed schedule direct either to the local census officer or to the General Register Office. In one large block of apartments in London where the enumerator was known to the residents nearly all the schedules were returned direct to the General Register Office. An unfortunate aspect of this arrangement was the failure of many of the householders to give a complete return. In the normal way the enumerator would have been able to obtain missing information before leaving the premises.

The payment of enumerators was based on the following fees -

1. Basic allowance for general duties	£12. 0s. 0d.
2. Allowance for each household or institutional establishment from which Census schedules were collected.	9d.
3. Mileage allowance - where a circuit of the enumeration district by way of every habitation, was in excess of 5 miles, for every complete mile which was traversed in covering such excess three times,	1s. 6d.
for each mile necessarily travelled to and from the nearest point of the enumeration district to and from the Census Officer's office.	9d.

In addition to the above, allowances were made to Census Officers and enumerators for their duties in connection with the Census of Distribution and there were special fees for the Post Enumeration Survey. All expenses in connection with the Census of Distribution were recovered from the Board of Trade.

(b) Local accommodation

As most of the census officers were also registration officers, the accommodation used for normal registration business was adapted for additional use on census duties. In something like 140 census districts, however, existing accommodation was unsatisfactory and temporary arrangements had to be made locally.

The need to meet expenses for additional accommodation arose from two main causes (i) the existing

office was too small to store the mass of census material and (ii) the enumerators could not be housed for briefing sessions. The additional offices and rooms hired for census duties were in places such as local council offices, professional offices, and private homes. The use of these places was obtained for an average of about £30 each over the period mid-March to mid-June. Charges for heating, lighting and cleaning were also levied in a number of districts where registration offices were used outside normal hours on census duties. One claim made for the services of a cleaner was aimed at reimbursing the census officer's wife.

For briefing enumerators, village halls, church halls, council chambers and other large rooms were hired. In the main this was because available rooms were too small but in a number of areas the object was to arrange briefing sessions in various localities within the census district to avoid excessive travelling by enumerators.

The total sum paid for additional accommodation was just over £1,000. It is clear from this that many local authorities allowed their accommodation to be used for census purposes free of charge, and acknowledgement of this help is gratefully given.

Local officers' duties

(a) Sampling procedure

To achieve the aims of sampling in private households described on pages 4 and 5 two forms of household schedule were prepared. One contained the full range of questions, the other a shorter list. The blank schedules were sorted into packs so that the schedule containing the full range of questions appeared at every succeeding tenth position; the first of these schedules was in differing positions from first to tenth for different enumeration districts according to a random number from one to ten allocated to each district.

The enumerator's instructions were to deliver the schedules to private households from the top of his pack of schedules in the order in which he made contact with householders. In this way, a random sample of one in ten of the households in his enumeration district would have received a schedule containing the sample questions. The object of the varying positions for the sample schedule in different enumeration districts was to avoid, as much as possible, any bias that might occur through the enumerator's natural tendency to begin delivery at a corner dwelling. The enumerator was not meant to have any discretion in deciding which household received the sample schedule; this was a matter of chance depending upon the order in which he made contact, and the random placing of the first sample schedule in his pack. Unfortunately, as described on page 78 enumerators did exercise choice in delivering the sample schedule, with the result that the sample was biased.

For institutional premises such as hotels, hospitals, residential schools, etc., sampling was conducted on the basis of individuals rather than establishments. The special schedules ("I" Schedules) issued to those establishments were in two main parts. The first part, on one side of the form, contained only the questions to be asked of all the population. Numbered lines provided for the entry of the particulars for ten persons. In Part II on the reverse of the form were the sample questions with provision for the entry of particulars in respect of one person only. The person for whom the additional particulars were to be given was determined by a line number recorded at the top of Part II of the schedule and referring to the person whose name was entered on that line on the reverse of the form.

As were the household schedules, "I" schedules were pre-arranged in packs with the schedules in sequence according to the variable line number from 1 to 10 recorded in Part II of each form. Before issue to the enumerators the schedules were arranged so that the first "I" schedule bore a sample line number in accordance with the random number allocated to the first and only the first enumeration district within the census district. Thereafter the schedules with the same sample line number occurred in every tenth position in each enumeration district. To assist further in the random distribution of "I" schedules, the census officer was instructed to issue them to enumerators in multiples of three. The enumerators and the persons responsible for completing the schedules were requested to use the forms in the order in which they were issued.

The above sampling arrangements applied also to the schedule "S" Issued for ships but no sampling arrangements applied for the enumeration of Forces personnel on schedules "N.M.A. (Home Forces)". There was 100 per cent enumeration of those personnel but sampling was carried out in the Census Office to avoid all people appearing in the sample tables.

The measure of the success of these sampling arrangements is recorded in Chapter 2 of Part II.

(b) Census officer's duties before census

Checking plans - With the decision to plan enumeration districts centrally there was some concern as to their accuracy and effectiveness when applied locally. During the early part of 1960 some of the plans drawn up by the staff in Southport were sent to selected registrars for checking and comment in the light of their local knowledge. This trial re-assured the planning staff and enabled them to go ahead with the planning of all areas on the same basis.

The ultimate objective was to get final plans to census officers in January, 1961. To achieve this, the plans had to be checked locally as soon as possible. Local registrars were asked to undertake the checking for all census districts falling within their registration sub-districts. They were asked particularly to ensure that boundaries were adequately described and that each district was of a size that could be handled by one enumerator. Further, they were asked to check that all new development and demolition since 1951 had been taken into account.

The main work of checking by the registrars was begun in July, 1960 and completed before the end of the year. A fee of 7s.6d. per enumeration district was paid for this work. In some areas where considerable amendment to the draft plan was necessary additional payments were made.

This operation could not be considered wholly satisfactory. Whilst many registrars made helpful suggestions for improvement of the plans, it was clear that in some areas the minimum of checking had been undertaken. Further, there was some element of dissatisfaction among those census officers who were not registrars, who had to operate with plans checked by others. In any future operation of this kind the work should be carried out by the person formally appointed for the census district.

Appointment, instruction and equipping of enumerators - With the final plans of enumeration districts in his hands, the next task of the census officer was to assemble his team of enumerators. Reference was made earlier to recruitment and general briefing (see page 17); the census officer was required to make the formal appointment of enumerators and assign them to enumeration districts. There was no reference back to the Registrar General for confirmation of appointment as was done in 1951; the responsibility rested squarely with the local officer. He himself was responsible for the enumeration of all special enumeration districts. He had to ensure that the enumerators knew the boundaries of their districts by referring them to his map of the census district and the description of the enumeration district with which each enumerator was supplied. He was to point out any particular difficulties that might be met in specific districts.

There was evidence even at the time of the census that the overall job of instructing the enumerators had not been carried out satisfactorily everywhere. The success of the enumeration depends basically upon the work of the enumerator and he must understand the job he is to do. The evidence of bias in the sample, which came to light later, merely underlines this point. More will need to be done in the future to ensure that the enumerators receive fuller training and supervision.

In February, 1961, the census officers received comprehensive instructions as to their duties and visits were made to several areas by headquarters' staff to explain the duties to groups of officers and to answer questions on them.

Such visits occurred mainly as a result of local requests. Their success indicates that, for the future, visits to various areas should be planned in such a way that all census officers should have an opportunity to learn about the census direct from headquarters' staff and be able to have their questions and doubts settled at such meetings.

Census schedules and other documents began to reach census officers during March and with their arrival the amount of work began to build up. One particular task which caused trouble in many areas was the arrangement of schedules for issue to the enumerators. The sampling arrangements described earlier were that household schedules should reach census officers in packs with sample schedules in every tenth position. Similarly institution schedules should have been arranged in the sequence of the sample line numbers. Many census officers soon found that these arrangements had miscarried which meant that before they could issue to enumerators, they felt bound to check through every one of some 50,000 schedules to ensure that sample schedules occurred in every tenth position. When satisfied with the order of the schedules the census officer arranged each supply in accordance with the random starting point allocated to each enumeration district.

(c) Confidential returns - procedure

The arrangements for issuing and collecting separate schedules for the purposes of confidential returns were necessarily complicated by the introduction of sampling methods. People who wanted to make a separate confidential return could apply to the enumerator or census officer for a separate schedule for this purpose. Provision was also made, in the Census Regulations, for the manager, chief resident officer, etc., in special enumeration districts to issue schedules for the purposes of making separate confidential returns.

The system was controlled by the issue of a small form with each separate schedule; part of it was attached to the separate schedule and the other part, if possible, to the corresponding main return. The person making the main return was instructed by this form to enter on it only the name and relationship to him of the person making the separate return. Instructions were complicated by the necessity to ensure that the separate schedule issued for someone in a private household was of the same type, i.e. sample or non-sample, issued for the household. In institutions, only the sample type schedule i.e. an E.10 or W.10 was issued and the manager or other person completing the main return was instructed to inform the applicant for a separate schedule whether his name was entered on a sample line of the "I" schedule. This enabled the applicant to decide whether or not to complete, all or part of the separate schedule issued.

To reduce the number of unnecessary applications enumerators were instructed to endeavour tactfully to ascertain the reason for the request as possibly the person concerned had an erroneous idea of the questions which were included on the census schedule. They were not, however, to refuse any persistent request. Certain people such as members of the Forces of the Crown in barracks, stations, etc., people receiving mental treatment and prisoners were debarred by the Regulations from obtaining a separate form.

(d) Enumerator's duties

Distribution of schedules - Before beginning delivery of the schedules, the enumerator was instructed to ensure that he knew the boundaries of his district by studying the census officer's map and the actual description of his enumeration duties and by making a preliminary tour. The latter also enabled him to plan the best route to take so that he could be sure to visit every building in his district and not those outside his district. During the distribution of schedules it was apparent that many enumerators had failed to observe this instruction. Within a few days of the start of delivery, about 50 reports were made to the General Register Office that enumerators had delivered schedules in their neighbour's territory.

The enumerator was instructed not to begin delivery before Saturday, 15th April but that he should make every effort to complete the distribution of schedules by the following Thursday, 20th April. During delivery, the enumerator carried with him his instruction book and a separate record book. In the latter he recorded details of every building, dwelling, household and occupier and the type and number of schedules issued to each occupier.

The detailed instructions for identifying different types of building, structurally separate dwellings and separate households were among the most difficult for the enumerator to grasp and it is clear from the record books that many did not understand what was required. It may well be wiser for the future to loosen the instructions by aiming at simplicity even if, by so doing, fringe groups become wrongly classified.

When delivering schedules the enumerator had to enquire also the number of rooms occupied by private households and the number in hotels and boarding houses. Where two or more households shared a dwelling he was required to ask whether each household had exclusive use of a kitchen stove or range and a kitchen sink.

When satisfied as to the type and number of schedules required by each household or establishment, the enumerator wrote the householder's (or manager's, etc.) name and address on the schedule and Issued It with the request that it be completed ready for his collection at an approximate specified time on Monday, 24th April. He could suggest that the schedule be left with a neighbour if there would be no member of the household available at that time.

For certain hospitals and nursing homes a leaflet had been prepared as a guide to the person completing schedules for those establishments, for the entries about usual residence that should be made for the patients and inmates. The enumerator was responsible for issuing those leaflets with the schedules to the institutions specified by the census officer.

Collection of scheduled - The main instructions to enumerators on collection were: "On Monday, 24th April, you must collect as many as possible of the schedules which you have delivered. Any that you do not collect that day must be collected on the following day." This instruction proved an impossibility in most areas because householders were found to be out and many frustrating return calls were made. As he collected each schedule, the enumerator indicated its collection by marking the entry already made in his enumeration record book.

If a household had moved away since his previous visit the enumerator was instructed to show in his record that the property was vacant; if the household had been absent on census night he recorded "Occupier absent". If a new household had moved in, he could accept either the schedule which had been issued in the district from which they had moved or the schedule he had issued for completion by the previous occupier.

If during his collection the enumerator discovered a household that he had missed, or if a schedule issued had been lost, he endeavoured to have a schedule completed forthwith. He was instructed to watch particularly for any caravan or similar temporary dwelling or any river craft, which had arrived in his district since he had delivered schedules.

The enumerator was instructed to examine collected schedules briefly before leaving the premises to satisfy himself that there were no obvious errors or omissions. If there were, he was instructed to obtain the correct information as tactfully as possible and enter it in the schedule.

When the collection was completed the enumerator reported the fact to his census officer. The aim was to report completion before Wednesday, 26th April but in most districts this was not possible.

Checking and completion of duties - Where the enumerator had collected any separate confidential returns (see page 21), he was required to transcribe the particulars on to the appropriate household or institution schedule. Next he numbered in sequence all the completed schedules (apart from the separate confidential returns); schedules relating to the same establishment were given the same number. The schedule numbers so allocated were copied in his enumeration record book.

He was required to examine the schedules for errors and omissions and in particular to

- (a) verify, so far as was possible, that the sex was correctly stated;
- (b) count the number of males and females, enter the totals in the spaces provided on the schedule and ensure that the total agreed with the number of persons entered on the schedule;
- (c) obtain fuller or more accurate information from the person responsible for making the return, where he discovered omissions or errors;
- (d) re-write any schedule that was torn, very dirty or illegible.

To minimise the cost of carriage and storage of household schedules, provision was made for the removal of the printed questions from each form (see page 5). When the enumerator's examination was complete he tore off the questions and destroyed them.

From the schedules, the enumerator completed his enumeration record by entering totals of males, females and persons for each household. He then totalled the columns in his record to arrive at the overall totals of males, females, persons, dwellings, private households and rooms in his district. He also provided a total of those entries which he had marked "Occupier absent".

Population report card - Each enumerator was provided with a population report card E.7 (reproduced on page 26). This card was specially designed for "mark sense" punching which formed the basis of the Preliminary Report.(see page 27). The enumerator was required to strike through the appropriate figure in each column which represented the corresponding figures in his totalled record showing persons, males, females, dwellings and households. He also marked the columns for "Enumeration District No." for identification. The card was pre-punched before issue to show other identifying particulars.

Precise instructions were given for marking the cards using a soft black lead pencil. The card was to be placed on a smooth hard surface, to carry out the marking. Despite those instructions some cards were completed in ink or biro pen and one enterprising enumerator carefully cut out rectangular horizontal holes in

each position that a mark should have been made. These were useless for the machine processes that were to follow.

The enumerator's instructions were to post the card in an envelope provided, to the Census Branch, Titchfield, not later than Sunday, 30th April, 1961.

Final duties - Following his completion of the enumeration slips CD/E.1 (described on page 26) the enumerator delivered those slips, the schedules and enumeration record book to the census officer by Monday, 8th May. Upon delivery of all the material he was required to give a certificate that he had properly and sufficiently performed the duties and obligations imposed on him by the Census Act and Regulations.

(e) Census officer's duties during enumeration

The census officer was required to report to the General Register Office on Wednesday, 19th April, that everything was in order, or, if not, what was wrong. The main objective of this system was to assure Census Branch that everything was proceeding satisfactorily in all districts. The system miscarried, however, since a very large number of officers failed to report at the due time, partly due to forgetfulness and partly because they were so overwhelmed as to be unable, conscientiously, to report everything in order.

The census officer's main injunction during the enumeration was to remain in his office so that his enumerators could readily contact him in case of emergency. In particular he was instructed to stay on duty in his office on Monday, 24th April. In fact, his services were very much in need on Saturday and Sunday, 22nd and 23rd April. Householders who had been missed during the delivery of schedules were requiring guidance and enumerators who had exhausted their supplies were needing to replenish them. Unfortunately, not all census officers were on hand to deal with those needs. In consequence it fell to staff in Census Branch to deliver schedules in the London area during the Saturday and Census day.

Census officers had to replace immediately enumerators who were unable or unwilling to carry on with their duties. Where difficulties arose through a householder's refusal to give information to the enumerator the census officer had to do his best to obtain it; failing that, he was required to report the facts to the Registrar General with a view to possible prosecution. Refusal was often due to a clash of personalities between enumerator and householder many of which were resolved by the census officer's intervention.

During the week following the census, the census officer received reports from his enumerators advising that collection was complete; any that he did not receive had to be investigated. Where there were special enumeration districts he collected and examined the schedules. When all the schedules in his district had been collected, he was required to report this to the General Register Office.

For the special enumeration districts, the census officer was required to perform all the duties of an enumerator including the completion and despatch of population report cards E.7, as described on page 22.

(f) Census officer's duties after enumeration

Immediately following the census, the census officer had duties to perform in connection with the post-enumeration survey, absent households and the Census of Distribution. Those duties are described on pages 24 and 25.

Checking schedules - By the 8th May, he should have received the enumeration record books, schedules and all other documents from his enumerators. Next began the major task of checking the schedules and coding some of the addresses. Checking involved:

- (a) seeing that the schedules had been correctly numbered;
- (b) ensuring that the reference numbers of the census and enumeration districts appeared on each schedule;
- (c) verifying that each entry was complete and that there were no apparent inaccuracies. Where omissions or major errors occurred he instructed the enumerator concerned to re-visit the household to obtain the required particulars. Any insertion or correction necessitated by those enquiries were made by the census officer in red ink.

Coding - in 1951, information necessary for assigning area codes to the addresses of usual residence and place of work was obtained through a rather ponderous system of exchange of prepared post-cards between one

census officer and another. For 1961, this system was abandoned and the task of assigning area codes was shared by the census officers and the Census Branch, Titchfield.

A prepared letter was sent to each officer showing the area codes for local authority areas in and surrounding his district. Also supplied were the area codes for places where large numbers of people were employed. The letter instructed the census officer to code with the letter "X" addresses which were within the local authority in which the person was enumerated. Addresses outside the area of enumeration were coded in accordance with the list of codes supplied provided that the census officer was certain of their location. If he was in any doubt he was instructed to leave the address uncoded.

For local authority areas through which the boundary of a conurbation centre passed, the census officer was provided with a map showing part of the central area and a list of area codes for addresses that were within or outside that area. Similarly for New Towns census officers were required to code addresses according to their location within or outside the New Town boundary with the aid of their census district map and a list of the appropriate codes.

The addresses with which census officers were concerned were usual residence in column C of the schedule and, in respect of people in the sample any previous addresses in column N (iii) and the address of place of work in column R (c).

Binding and despatch of schedules - After checking and coding the schedules the census officer separated them, according to size, into three main groups - sample schedules (E.10 etc.), non-sample schedules (E.90 etc.), and institution, shipping and Forces schedules ("I", "S", "NMA"). Ancillary schedules used for confidential returns and spoiled forms were packed together separately.

The sample schedules for up to ten consecutive enumeration districts were placed in one binder. Generally one binder was used for the non-sample schedules for each enumeration district. An overriding instruction was that no one binder should contain schedules relating to different local authority areas. No binders were provided for the third group of schedules; these were arranged, regardless of type, in numerical order of enumeration district numbers and in order of schedule numbers within each enumeration district.

The despatch of schedules to the Census Branch, Titchfield was phased over the period May to July, 1961. The objectives were (a) to allow more time for checking the schedules to as many census officers as possible, (b) to arrange the receipt of schedules in Titchfield in manageable numbers, and (c) to get some schedules to Titchfield as early as possible so that processing could begin. Each officer was given a specific week in which to despatch his schedules. The various Regions of British Railways were advised of those dates so that they could arrange immediate collection as soon as the census officer told the local Goods Agent that the packages were ready.

Despatch of other documents - The census officer was instructed to send the Ordnance Survey map and plan of the enumeration districts to Titchfield not later than 22nd May, 1961. Forms of appointment of enumerators were sent as soon as their final payments had been made.

The enumeration slips CD.E/1 for the Census of Distribution were grouped into wards of urban areas and rural districts and sent to the Board of Trade Census Office.

(g) Absent private households

As will be seen from the duties recorded on page 22 enumerators were required to note their record to show all private households where every member of the household was absent on census night. Information was required about those absent households in order to complete the census data about private households and dwellings. The information was sought on a voluntary sample basis and enquiries were entrusted to census officers. They undertook this work as soon as the more urgent tasks concerned with the census had been completed.

To select the households for enquiry, the census officers were instructed to arrange their enumeration record books in order and to number, in sequence, all the entries marked "Occupier absent" beginning with enumeration district numbered 1. Each officer was given a randomly chosen number between 1 and 100 and he was told to select from his numbered absent households, the household corresponding to the random number. Thereafter, he selected every household with the random number plus 100, 200, etc. E.g. for a district with random number 45, the census officer selected the 45th, 145th, 245th, etc. absent households numbered in the enumeration record books. In this way information about one per cent of the absent households was obtained.

Where the census officer was able to make contact with the selected households, he was required to obtain the following facts:

- (i) whether all the members of the household were absent from that address on census night;
- (ii) whether they were enumerated as a separate household elsewhere in England and Wales
- (iii) the number of persons usually resident in the household;
- (iv) the number of rooms occupied;
- (v) whether the rooms were a separate dwelling;
- (vi) where the dwelling was shared, whether the household had a separate stove and sink.

Where the census officer was unable to make contact or where information was refused, he was not required to substitute another household nor seek information from anyone else.

(h) Local officer's duties for Census of Distribution

The work undertaken for "the Census of Distribution has been described generally on page 7. The instructions to enumerators and census officers covered the information to be recorded, copied and sent to the Board of Trade. Descriptions and examples of the kinds of premises, to be included and those to be excluded, were included in the instructions.

Whilst the enumerators were compiling the record of all buildings in their enumeration districts they were required to enter in their record book the nature of the business and the name of the proprietor, company, etc., for all premises engaged in the retail and building trades. All the information was to be obtained by outward inspection of the premises; if it could not be obtained in that way it was to be omitted.

After the enumeration the enumerator was required to copy particulars entered in his record on to enumeration slips CD.E/1, reproduced on page 26. To assist processing by the Board of Trade, the enumerator entered one letter only in each frame of the grid provided.

The completed slips were passed to the census officer for general scrutiny and despatch to the Board of Trade.

(i) Post-enumeration survey

The general aims of this survey have been described on page 11 and full details are given on pages 45-50 in Part II of this Report.

The work involved in conducting the survey was akin to a census in miniature, requiring planning of districts, distribution of questionnaires and summary of results.

The plots were selected, traced on a map and described in terms of recognizable landmarks by the planning staff in Southport.

Instructions on the survey were issued to Census Officers on 5th April but details of the plots were not supplied until 24th April, 1961, after the census, so that enumerators could not introduce bias into the results.

Each census officer had on average 2-3 plots but some had none and the maximum was six. He was required to select his best enumerators and hand them forms completed as described on pages 55-64 together with detailed instruction on their duties. The survey was to start as soon as possible after 1st May and be completed by 15th May, 1961.

A fuller description of the survey appears on pages 45-50.

Population record card

CENSUS DIST. / CENSUS ENGLAND AND WALES 1961 POPULATION REPORT CARD <small>IBM UNITED KINGDOM LTD.</small>	E.D. NO.	PERSONS <small>1000 OR OVER</small>	MALES <small>1000 OR OVER</small>	FEMALES <small>1000 OR OVER</small>	DWELLINGS	HOUSEHOLDS	E.7 <small>FOR USE AT CENSUS OFFICE</small> AREA DIST. NO.																							
		0	0	0	0	0	0																							
		1	1	1	1	1	1																							
		2	2	2	2	2	2																							
		3	3	3	3	3	3																							
		4	4	4	4	4	4																							
		5	5	5	5	5	5																							
		6	6	6	6	6	6																							
		7	7	7	7	7	7																							
		8	8	8	8	8	8																							
	9	9	9	9	9	9																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Form used for Census of Distribution

ENUMERATORS* SLIP												FORM CD.E/1.												
Owner of Business or Trade Mams (in block letters)													Remarks											
Number and Street (in block letters)																								
Town and County (in block letters)																								
Kind of Business																								
For Board of Trade use only																								
Registration Number													Form No.			I	M							
																s	C							
51-453S B.N.M. * S. (B6401)																								

CHAPTER 3

Processing and publications

Production of the Preliminary Report

The urgent need for the production of basic figures from the census was recognised by the General Register Office and speed was the governing factor influencing the provision of preliminary figures. Although every effort was made to provide accurate figures, accuracy was abandoned for about 300 enumeration districts where, to secure it, delay would have occurred. Towards that aim of speed, reports from enumerators were sent direct to the Census Branch, Titchfield and not through local census officers as was done in 1951. The method of reporting on machine cards (described on page 22) was also aimed at avoiding the time necessary to convert the figures to punch cards manually. These were methods, untried at any previous census and, in consequence, not all of the plans made were wholly successful.

Processing of report cards E.7 - Enumerators and census officers were instructed to post their completed cards by Sunday, 30th April. Even if some of the schedules had not been collected, officers were, none the less, instructed to post the cards showing the totals reached by that date. Despite those firm instructions, only about a third of the total reached Titchfield by Monday, 1st May. It was not till Thursday of that week that the bulk of the cards had been received.

The first process was to pass the cards through a "mark sense reproducing machine". This machine was designed to punch holes automatically in respect of the figures marked on the cards. Essentials for its proper functioning were

- (a) the cards should not be creased or damaged in any way;
- (b) the marks should be in black lead pencil and join the brackets enclosing each figure;
- (c) the marks should be firmly made in a continuous line.

Some thousands of the cards received offended one or all of those essentials, and time was wasted during which some 15,000 cards were re-marked. In addition about 24,000 cards were punched manually, because either they were damaged or had been wrongly completed by the enumerators. For example, in some cards the figures for hundreds, tens, and units, were marked in a single column, in others all the figures were deleted except those that were required.

When punched, the cards were sent from Titchfield to the computer installation at Worthy Down. There, the records were transferred to magnetic tape and subjected to a series of tests and edits in the computer. The effects were to raise for enquiry figures that were apparently inconsistent with expected results and figures that were inconsistent within any one enumeration district, e.g. the totals of males and females did not add up to the number of people. Thousands of enquiries emerged from the computer which had to be resolved in Titchfield, frequently by writing or telephoning the census officers. Further processing by the computer revealed that reports from about 1,500 enumeration districts had not been received. Letters were sent to the census officers involved, requesting them to telephone to Titchfield or to Census Branch, London, the figures that were entered in the record books for the districts under query. On the 11th May, some 300 such letters were despatched involving over 1,000 enumeration districts. On the following day, five officers in London were engaged almost full time in manning telephones to receive the reports from census officers and to transmit the figures to Titchfield. The Branch at Titchfield was similarly inundated with incoming reports besides originating further calls to obtain information. A particularly mysterious problem at that time was that apparently no reports at all had been received from any of the enumeration districts in about six Census Districts. After diligent searches had been made in Titchfield and Worthy Down, it was discovered that those census officers had collected all their enumerators' report cards intending to despatch them to Titchfield en bloc; had they done so immediately, confusion and difficulty would have been removed.

During Saturday, 13th May, a halt was called to further enquiries in Titchfield and appropriate figures (calculated earlier) were incorporated for those districts from which no return had been received. The staff of the General Register Office at the computer installation then began processing the information to obtain the figures

needed for the tables of statistics to be published. The staff worked throughout Saturday night so that by Sunday figures in the form of punched cards and a manuscript commentary on the results were available in Titchfield for the next stage of production.

The punched cards from the computer were fed into an automatic typewriting installation, the "Cardatype" (I.B.M. 858). (See page 38). The first batch of copy was taken to the printers early on Monday morning and all material was in the hands of the printers by Thursday, 18th May. The volume thus prepared was reproduced by photo-litho printing and published on 7th June, some six weeks after the first reports began to arrive in Titchfield. Valuable co-operation was received in achieving that date, from the printers at the Admiralty's Hydro- graphic Supplies Establishment, at Taunton.

The experience of producing the Preliminary Report in the manner described above suggests that, for the future, it may be advisable to have reports from enumerators checked by the census officers before transmission to the processing office; many of the reports from enumerators contained errors which could have been corrected by census officers. The delay caused in this way may well be less than the delay resulting from the resolution of the many queries that arise.

Receipt of schedules

Despatch of schedules to Titchfield was phased over the period May to July, 1961 but those from about 50 districts were received after that date. Full liaison was maintained with British Railways and more particularly with the agent at Fareham station. Goods traffic was not normally handled at Fareham but special arrangements were made by British Railways because of its proximity to Titchfield. The boxes of schedule volumes were delivered by railway van and were off-loaded and checked direct into the schedule store.

Early deliveries of schedules were moved straight to the sections for revision and coding. Once the sections had sufficient work, the volumes were stacked in the reception bay where they were sorted and put into racks. The schedule binders with uniform-sized hard spines made the task of stencilling identifying particulars on to them easier than the similar operation in 1951. The reception, stencilling and racking of the volumes was spread over a period of 16 weeks and occupied a staff of 14 messengers and paper keepers. 72,000 volumes were handled in this way with a total weight of about 200 tons. They were housed in wooden racking measuring 15,200 feet overall.

The type of binders used for schedules was better than that used in 1951, but even so there were faults. Hundreds of binders were scrapped by the reception staff because the springs holding the split metal securing posts within the binders had broken. There was still the tendency, experienced in 1951, for the first few schedules to become torn from their binders.

Processing the schedules and enumeration books

(a) General

The introduction of sampling at the enumeration stage yielded information about some topics on a ten per cent basis only. The aim in processing was to produce results first from the 100 per cent information and later from the 10 per cent data. There follows an account of the various stages through which information was converted to figures, figures to punched cards, and cards to results; those stages are illustrated diagrammatically on page 29.

(b) Schedule revision

This process was designed to provide a general check of the schedules and to insert certain minor codes. The revising clerk was provided with detailed instructions as to his duties of which the more important were:

- (i) To decide for each schedule whether it related to a private or non-private household. Where a private household schedule had been issued for premises in which there were five or more boarders, foster children, etc., that household was treated as non-private.
- (ii) To code non-private households to one of 20 classes into which those households were to be divided and for certain establishments, to code each person in them to one of 6 groups of inmate, or guest.
- (iii) To code dates of termination of marriage entered in Column H (ii) of the schedules.

- (iv) To prepare the schedules for punching by supplying codes for omissions and reducing the entries to standard form where the schedule was badly completed.

Replies to some of the questions proved particularly troublesome during this revision work. For example, the panel on the schedule designed to indicate whether a household in a shared dwelling was sharing a stove and sink was completed haphazardly. In a few enumeration districts the panel was completed for every schedule whether or not the dwelling was shared.

A staff of 58 revisers and 3 supervisors were employed on this work and with some assistance from other sections over a short period, completed the revision in just over 12 months. By the fourteenth week of their training period, staff were averaging 580 population per hour and towards the end of the work, speeds of 625 per hour were being maintained.

Coding enumeration record books - The enumerator was required to list all the buildings, dwellings and households as he made his initial round of the enumeration district to deliver schedules. It follows that the subsequent numbering of completed schedules should, in the main, show the number 1 for the first household in the record and continue in sequence through the book. The coder was required to check that numbering sequence and that, generally, the enumerator had appeared to understand his instruction.

Coding action was required to indicate the following:

- (a) buildings containing one dwelling and non-residential or institutional accommodation;
- (b) buildings containing more than one dwelling;
- (c) dwellings containing more than one household;
- (d) household spaces without an occupier or with the occupier absent.

The usual combination of one building containing one dwelling and one household required no coding action. Types of habitation that were separately coded were (i) institutional premises or ships (ii) caravans (iii) houseboats and (iv) miscellaneous structures such as chalets, huts, tents, etc.

Action was also taken by coders to round to whole numbers any fractions of rooms recorded in shared dwellings; this action did not affect the overall total of rooms in any one dwelling.

It was during the coding of record books that the quality of the enumerators could be gauged from the manner in which the books were completed. A source of considerable trouble was the sequence in which parts of buildings were entered. All parts should have been grouped together in the record, instead entries of parts of the same buildings appeared scattered through the enumeration book. Invariably such books had to be re-written with consequent re-numbering of schedules, to bring the parts together. Some 4,000 hours were spent by coding staff on this work. The fact that many enumerators had failed to understand the instructions about shared dwellings became apparent from this coding work. Special action was needed to establish the one-room households that were sharing dwellings by reference to the entries about amenities recorded on the schedules; in many cases there was misleading evidence in the enumerator's record. Further inconsistencies were uncovered during the editing procedures described on pages 31 and 32.

The work as a whole, was completed in Just over 12 months by a staff of 1 executive officer and 6 clerical officers.

(c) Birthplace and nationality coding

The schedule questions required statements of the country of birth, and for people not born in the United Kingdom, citizenship or nationality. For those claiming citizenship of the United Kingdom and Colonies, the mode of acquisition of that citizenship was also required. The staff dealing with the answers to those questions were given instructions enabling them to assign codes of up to four digits to any of the answers supplied.

A large bulk of the coding was eliminated by the instruction to leave uncoded all entries showing "England" as the country of birth. Most other entries relating to the country of birth were assigned a code of two digits, drawn from a comprehensive listing of countries with their codes. Provision was made in that listing for coding indefinite answers such as "Ireland" or "Great Britain". From the same list, identical two-digit codes could be assigned for nationality in the case of most Commonwealth and foreign countries. For the countries of

the United Kingdom and Colonies, a second list provided for coding the statements of the mode of acquisition of Commonwealth citizenship. In that list too, provision was made for indefinite or incomplete statements.

This work was relatively simple and was completed by an average of 19 clerical assistants over the period June, 1961 to June, 1962. Coders rapidly acquired speed and reached an average of 1,500 population per hour after 4 weeks experience; longer experience produced outputs averaging 2,500 per hour.

(d) Area coding

This process was the counterpart of that carried out locally by census officers and described on page 24. All addresses in columns C "Usual Residence", N "Migration" and R(c) "Workplace" of the schedules, which had not been coded locally, were coded by clerical staff at Titchfield.

To assist them, large coding boards were provided on which were recorded the four-figure codes for all local authority areas in England and Wales, listed in alphabetical order. An "Index of Place Names" was also provided in which, besides local authority names, every known town, village and locality was recorded in alphabetical order with the appropriate code. Pre-coded lists of all premises in which large numbers of people were employed were also provided to assist the coding of addresses of places of work. Street lists, directories and maps were used by a special query section to resolve difficulties with certain addresses. General pitfalls were the addresses used for postal purposes where a town in one local authority area was shown in addition to a village or small town in another area. For addresses outside England and Wales, lists of countries, or groups of countries were provided with appropriate codes.

In addition to area coding, staff dealing with the answers in column "N" were required to code the duration of stay at the address of residence where that had not changed in the year before-the census. At the outset, this coding and area coding for both migration and workplace was carried out by marking one side of punched cards, but this system was later abandoned in favour of coding directly on the schedules. (See also page 32).

Although it was envisaged in 1951 that central area coding would present great practical difficulties, it was found that division of coding between local and central officers worked well. Something like 3 per cent of the addresses quoted on the schedules were too indefinite for coding by the general staff and had to be resolved by the query section. The local officers coded something like three to four-fifths of the addresses and where checks were possible, it was found that their work was very satisfactory. Only in the London postal area were there a number of errors due to the diversity of workplaces and difficult local boundaries, but even there the overall percentage error was only in the region of 5 per cent.

The work of the people engaged in this coding produced the information necessary to

- (a) establish the resident (as distinct from the enumerated) population in local authority areas, New Towns and central areas of conurbations,
- (b) show the degree and direction of population migration within the country, and
- (c) indicate the movement from one local authority to another involved in the journey to work.

An average of 16 clerical staff were employed on this work over the period June 1961 to July 1962.

(e) Editing

A section was set up in August 1961 consisting of 2 executive officers and 17 clerical officers, to deal with the output of the computer Edit I and Edit II programmes (see page 39). The functions of the section were to refer to the original schedules to ascertain the correct data for those items queried by the computer programme and to specify the details of the correction cards to be punched in order to modify the computer data.

Data queried by but acceptable to the computer which were confirmed on inspection of the schedule did not require the punching of a correction card. In all some 1,500,000 queries were raised by the computer and 500,000 correction cards punched.

The staff in the section was increased to 3 executive officers and 26 clerical officers in August 1962 and remained at this figure until the end of March, 1963 when it was steadily reduced to the end of editing in June, 1963.

Staff engaged on this work required a thorough knowledge of all the other census processes and considerable judgement was necessary in dealing with incompatible data on the schedule. Some difficulty was found in supplying sufficient numbers of suitable staff in the face of capacity demands and a fair proportion of the staff was rejected during training.

The 10 per cent data were similarly edited. This work which was commenced in early 1962 was largely concentrated into the period January to November, 1963 and employed 3 executive officers, 16 clerical officers and 3 clerical assistants.

The staff engaged in this work required a thorough knowledge of the economic activity codes. The section was staffed largely by officers moved from economic activity coding shortly before the latter was completed.

Coding of 10 per cent information - The subjects for which coding action was needed were (a) scientific qualifications (b) economic activity (c) workplace (d) household composition and (e) migration. The instructions for determining the codes to be applied are dealt with separately for each of those subjects; this section deals with the methods used for transferring the codes to punched cards.

After the editing procedure for the 100 per cent information had been completed, the computer duplicated that information for each person who was included in the 10 per cent sample on to special cards (reproduced on page 36). The next stage was to punch the 10 per cent information for those same people into the special cards. The first step was to pass the cards through a machine, the I.B.M. 519, which printed on to the left hand edge of the cards the main identifying particulars for each person - sex, age, schedule number and sequence number on the schedule. This enabled staff in the coding sections who were to handle the cards next, to identify the appropriate card for a person included in the sample and mark on the reverse side of that card the various 10 per cent codes that applied. The marked cards were sensed in the I.B.M. 519 where holes were automatically punched in the appropriate positions.

At an early stage in planning the possibility that the 10 per cent items could be coded on the schedules and punched by punch operators into the cards pre-punched with the 100 per cent information had been rejected owing to the difficulty of ensuring that the data for the correct person was punched into the card. It became apparent in February 1962 that the irregular supply of 10 per cent cards from the computer was leading to the coding section working at a very low efficiency. Because of this, consideration of 10 per cent coding on the schedules was re-opened and a satisfactory method was devised of linking cards and schedule entries.

Experience had shown that the marking of cards was a very slow process owing to the care needed to identify the card and make marks which would be accepted by the reproducing machine. The increased coding speeds found possible when coding schedules rather than marking cards, more than offset the increased costs arising from the additional stage in the work.

In order to ensure that the pack of cards given to the puncher was complete and in sequence, the coding of household composition was done after the receipt of the cards from the computer and the coder was responsible for checking the pack. He also initiated cards for absent members of households.

(f) Economic activity

Preparation of classifications

- (i) **Industry** - The classification of industries used in the Census was based on the Standard Industrial Classification produced by the Central Statistical Office. In 1956 the Central Statistical Office initiated a review of the classification used by the General Register Office and other Departments since 1948 and a committee on which the General Register Office was represented produced a revised version in 1958 which was used for the 1961 Census.
- (ii) **Occupations** - It was decided in 1957 that the classification of occupations used in 1951 had proved too detailed for the quality of information available and a working party within the General Register Office was instructed to produce the outline of a completely revised

classification of fewer headings bearing in mind the needs of medical and civil statistics and the recommendations contained in the International Standard Classification of Occupations.

The resulting classification was submitted for comments to interested Government Departments and the Medical Research Council and various changes were made in the light of the comments received.

From that point until January 1959 efforts were concentrated on allocating the occupational terms from the 1951 index and those discovered since, to the various rubrics of the classification, and on preparing a provisional index for the coding of death registrations for January 1959 onwards. Occupations recorded at death registrations are coded only for the 5 years about the census to provide information for the occupational mortality analysis.

During this period and subsequently officers of the General Register Office had consulted various concerns with large numbers of employees with the help of the Ministry of Labour, and obtained invaluable information on occupational nomenclature and Industrial organisation.

The provisional index was given a final revision and published together with a description of the classification as "Classification of Occupations 1960" in November 1960.

Coding - Contrary to 1951 practice and partially at least to minimise card handling for mark sensing it was decided to code occupation, industry, economic position, employment status and hours worked as a single operation. It is doubtful whether this was a successful change.

Training of the six executive officers to control this work commenced on 1st May and continued until 23rd June. The training consisted of an analysis of the classification with coding exercises at each stage. 150 dummy schedules incorporating a large number of the more difficult coding situations had been constructed and these were used in the final stages of training in the absence of live schedules. Each supervisor made one half-day visit to a local industrial establishment.

Two intakes of coders one of 24 on 26th June and one of 20 on 17th July were given similar, though less intensive, training.

After a short period on mark sensing all the staff was concentrated on preparing the special cards for the Scientific Qualification enquiry, the results of which were required urgently by the committee which was studying scientific manpower in this country.

Economic activity coding was continued early in 1962 but progress was slow, due mainly to the absence of cards from the computer, and commencing in February the staff turned over to coding on the schedules and continued in this way until the end of March 1963.

As on previous occasions the coding of industry was undertaken with the aid of lists of employers. In 1961 these lists contained the names, addresses, industry and area codes for all establishments employing 25 or more persons. They were prepared by a staff of an executive officer and 6 clerical officers starting in January 1961 from some 300,000 forms supplied by the Ministry of Labour and covering all establishments with 5 or more employees. These forms were later constituted into a single alphabetical index for reference purposes for firms not listed for the coders and for which inadequate information was given on the schedule.

Owing possibly to the size of the lists of employers (that for Birmingham C.B. covered 143 pages and embraced 2,792 firms) and the higher standards of accuracy imposed as a result of the 10 per cent sample, overall coding speeds were very low, the average rate rising to only 155 entries per hour. Overall 67 per cent of the entries were checked.

(g) Scientific qualifications

The coding of scientific qualifications was originally planned as part of the general procedure for coding the 10 per cent information, but the urgent need for the results necessitated the coding of these

qualifications well in advance of the other coding procedure.

Coding began in the third week in August 1961, and to ensure early completion, the whole of the staff allocated to the coding of economic activity, 6 executive officers and 40 clerical officers, were transferred to this work. However, to avoid repeated handling of the 1,400 volumes of institution schedules, economic activity in these schedules was coded at the same time as scientific qualifications. These 1,400 volumes contained information about 1,000 people with qualifications and 50,000 with economic activities that required coding.

Because this work was being carried out ahead of other procedures it was necessary to create mark-sense cards (see page 27) for each person who had recognised scientific qualifications; for the 10 per cent coding operations which were carried out later such cards were produced automatically by the computer (see page 39). The 100 per cent information marked on the created cards was restricted to details of sex, age, marital condition, country of birth and citizenship. The 10 per cent information relating to economic activity was also coded and marked on the cards.

The coding of the qualifications fell into two parts:

- (i) the evaluation of the type of qualification (i.e. university degree, technological associateship or diploma, membership of professional institution) in order to include only those of sufficiently high standard; and
- (ii) the separation by subjects in which the qualification was held, so that only those in the desired range of science and technology were included. To assist in this work guiding principles and lists of the most likely terms had been prepared by the Office of the Minister of Science.

The first week of coding produced a disturbing number of cards which could not be resolved from the lists without prior reference to the Office of the Minister of Science. These queries fell into five groups:-

- (i) qualifications not included in the lists,
- (ii) qualifications only partly covered by the lists,
- (iii) organisations, or letters indicating membership of organisations, not listed,
- (iv) subjects not covered or doubtful as to the group within which they should be included, and
- (v) foreign (i.e. non-Commonwealth) qualifications.

Most of these queries were resolved by the middle of September but the queries on foreign qualifications particularly were not settled till some time after the main bulk of the work had been completed in late October 1961. A total of 10,620 hours by clerical staff and 1,942 hours by executive officers were needed to complete the work.

Processing of the marked cards was carried out by means of the mark-sense reproducer '(see page 27) and a conventional card sorting, counting and printing machine, the I.B.M. 101, which was being used for other statistical work in Titchfield. The figures in the results sheets from this machine were typed manually, using the cardatype or electric typewriters, on to prepared tables format. These were printed by photo-lithography to provide the report published on Scientific and Technological Qualifications.

(h) Household composition

The analysis of "de jure" households on a 10 per cent basis to provide the tables of household composition was made by the computer using the information coded by the household composition coders. These coders were instructed to identify each person within each household by a code which identified whether the person was in a family or not and, if so, which family and also the relationship of the person (or family) to the head of the household.

Visitors to the household were identified by a separate code and additional and identifiable punch cards were added to the 10 per cent card pack for each person returned in Part III of the schedule as an absent person.

The section was also responsible for making the sample analysis of absent persons for the statistical checks made later and also checking of the 10 per cent cards referred to on page 36.

The work was under the supervision of an executive officer and was carried out by staff averaging 11 clerical officers over a period of about 21 months.

Punching and machine processes

(a) Punching

The introduction of sampling and the processing of cards by computer resulted in the use of several different types of machine cards. Those used for the schedule information specifically are reproduced on page 36. It will be seen that the cards for the 100 per cent information on all types of schedule provided for data concerning up to three persons, but for the maximum use of the card the initial identifying particulars in columns 1 to 10 and the usual residence code in columns 21 to 24 had to be the same; when any one of these details changed a fresh card was begun. By the use of programme cards in the punching machines, common identifying particulars were automatically duplicated and columns which did not apply to a particular person could be skipped by depression of one key.

Simple coding was applied by the punchers for columns 13 (tenure), 14-18 (household arrangements), 26 (sex), 29 (marital conditions) and the dates of marriage in columns 38-43. Where there were figures in the answers (e.g. age, columns 27-28) these were punched directly, in other cases the codes supplied by the various sections were punched in the appropriate columns.

As reported on page 32, the cards for 10 per cent information were originally designed for automatic punching by mark-sense reproduction, but later were punched manually. The cards reached the punchers with the schedule number, sex and age of the person concerned printed on the left hand edge of the card. Also pre-punched into the card was the appropriate 100 per cent information and identifying particulars in columns 34-80. The puncher's job was to match each card with the entry relating to the person on the schedule and punch from the schedule the codes recorded for the information in card columns 5-31.

Enumeration record books - The card used for punching from these books is reproduced on page_37. One card was used for each page of the enumeration book, and two columns only for each entry on a page beginning with columns 21 and 22 of the card. Having punched the identifying particulars in columns 1-10, the puncher punched the unit of the schedule number followed by the dwelling classification in the next column. She also interpreted into simple numeric code various symbols inserted by the coder to indicate sharing of buildings and dwellings and vacant and untenanted dwellings.

Cards for computer control - Additional machine cards required for computer control were ward/parish cards and correction cards. Ward/parish cards were punched from sheets prepared by the intercensal section. The sheets provided historical information for the eventual production of results and also automatic production by the computer of "leader" cards to assist further in computer control. The ward/parish cards were "alpha" punched so that machines were able to print out the names of the areas involved.

Correction cards for use in conjunction with the editing procedures were also punched (see pages 31 and 37).

Punching progress and rates - The speed at which the main punching of the 100 per cent information was done exceeded expectations. A staff of one executive officer, 10 supervisors and 35 punchers began this work in May, 1961, increasing to 100 punchers by August, 1961. The executive officer attended a course of instruction on the machines with the machine company and visited a large number of punching installations to study their methods. With this knowledge she was able to train her supervisors and through them the punchers. Speeds of punching built up fairly rapidly and when proficiency allowances were introduced in July 1961, the bulk of the staff achieved and surpassed the required rate of 7,500 key depressions per hour.

Punching rates were maintained so well that staff leaving or transferring from the section were not replaced. 20 punchers began work on the ten per cent information in March 1962. By the time the one hundred per cent punching was completed in August the total number of punchers had dropped to 60 and 25 of these were transferred to the Statistical Branch of the General Register Office in Titchfield. For the 100 per cent punching, staff were reaching rates of 15,000 key depressions per hour and towards the end were competing with each other to hold the record rate of production.

EXAMPLES OF CARDS USE FOR CONTROL

Enumeration books

FIRST SCHED. NO.	REGN. DIST.	E.D. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
0000	0000	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1111	1111	1111	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2222	2222	2222	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3333	3333	3333	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4444	4444	4444	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5555	5555	5555	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6666	6666	6666	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7777	7777	7777	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8888	8888	8888	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9999	9999	9999	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

IBM UNITED KINGDOM LIMITED 866-03384 GENERAL REGISTER OFFICE

Wards and parishes

AREA CODE	REGN. DIST.	PSRN. NO.	WARD/PARISH NAME	NO. CARS	POPUL. 1951	MALES 1951	FEMALES 1951	DWELLS 1951	MHLOS. 1951	ACREAGE
0000	0000	0000		0	0	0	0	0	0	0
1111	1111	1111		1	1	1	1	1	1	1
2222	2222	2222		2	2	2	2	2	2	2
3333	3333	3333		3	3	3	3	3	3	3
4444	4444	4444		4	4	4	4	4	4	4
5555	5555	5555		5	5	5	5	5	5	5
6666	6666	6666		6	6	6	6	6	6	6
7777	7777	7777		7	7	7	7	7	7	7
8888	8888	8888		8	8	8	8	8	8	8
9999	9999	9999		9	9	9	9	9	9	9

IBM UNITED KINGDOM LIMITED 866-03567 GENERAL REGISTER OFFICE

Leader cards (for computer control)

LEADER NUMBER	REGN. DIST.	E.D. NO.	NUMBER OF SCHEDULES IN ED.	PRELIM. POPULATION	ADMIN. AREA CODE	ENGLISH/WELSH
0000	0000	0000	0	0	0	0
1111	1111	1111	1	1	1	1
2222	2222	2222	2	2	2	2
3333	3333	3333	3	3	3	3
4444	4444	4444	4	4	4	4
5555	5555	5555	5	5	5	5
6666	6666	6666	6	6	6	6
7777	7777	7777	7	7	7	7
8888	8888	8888	8	8	8	8
9999	9999	9999	9	9	9	9

IBM UNITED KINGDOM LIMITED 866-03541 GENERAL REGISTER OFFICE

The standard of accuracy required was under 3 per cent of cards with errors. All punching was fully verified except the punching of the 100 per cent information for which only one schedule in ten was verified after the puncher became proficient.

(b) Reproducing, sorting and collating

These processes involved the operation of three types of machine. The various functions of the reproducer (the I.B.M. 519) have been described on pages 27 and 32. The sorter had no specific process to perform but it was necessary for re-grouping cards which had become mixed during other processes.

The collator was used for merging the different types of cards for each enumeration district so that the cards could be presented to the computer installation with the schedule numbers running in one continuous sequence thus providing a check that information for every schedule was being supplied. Up to four groups of cards were punched for each enumeration district. There were cards from non-sample schedules (E.90 etc.), from sample schedules (E.10 etc.), from non-private schedules (I, S, NMA) and from enumeration record books. For the first three groups the schedule numbers ran in sequence within each group with the gaps in numbering sequence in one group being completed by the schedule numbers in the other groups. The first schedule numbers punched in the enumeration book cards duplicated the corresponding numbers on the cards punched from the schedules. During these processes the machine was able to detect simple errors in punching such as incorrect schedule numbers and punching in the wrong fields. A leader card, to provide identification, was supplied by the computer section and placed in front of the merged cards for each enumeration district.

The collating process was relatively slow and it became necessary in December, 1961 to obtain a second machine in order to ensure a sufficient supply of cards to the computer. A maximum staff of 4 clerical officers, 4 machine operators and a clerical assistant were employed on all the processes of reproducing, sorting and collating. They were under the supervision of an executive officer who had received special training in the operation of the machines and particularly in wiring the control panels which were used to determine the functions performed by the reproducer and collators. The clerical staff were engaged in assembling the cards for the machines and in settling queries which were raised during the running of the machines. The staff handled the cards for Scotland in addition to those for England and Wales. All the collating was completed by October, 1962 and the end printing and reproducing by February, 1963.

(c) Card controlled typewriter ("Cardatype")

The section operating the "Cardatype" machines dealt with the conversion of data emerging from the computer into tables of results which could be reproduced by photo-litho printing. Two installations were used, each consisting of a bank of three typewriters electrically operated from punched cards. The typewriters were fitted with varying combinations of type founts to provide italic, bold and normal type.

The computer was programmed to produce, in the form of punched cards, the statistics required for each table in the reports to be published. The "Cardatype" installation was controlled by panels specially wired for each table of results. One executive officer attended a course of instruction by the manufacturers in the involved wiring system and machine operation. He, in turn, was able to instruct other executive officers in this specialised work.

The section had four main jobs to perform, - specification, wiring, operating, and patching. Specification involved the use of varying symbols and techniques to instruct programmers as to the lay-out of the out-put cards to be produced by the computer so that the desired lay-out of the tables of results would be achieved. Having specified the tables in this way, the executive officers proceeded to wire the control panels of the cardatype to match the specifications.

Machine operators were able to perform the relatively simple job of feeding the punched cards into the machines and ensuring that the typewriters operated satisfactorily. Some of the tables required up to three punched cards for one line of figures. To guard against any one of the cards having become displaced, an automatic arithmetic check was built in to the control. So long as cards were being fed in the correct order one of the typewriters produced a "zero" balance for each line of figures. It was part of the operator's task to check that this occurred during running of the machine.

The three typewriters produced identical figures and words but in varying type founts. It was the job of the patchers (clerical officers) to build up a master copy by selecting and cutting material in the founts required from one copy and patching it into the master. To assist in this delicate work, glass-topped illuminated tables were provided. When patching was complete the tables of results were in a form which could be directly photographed for production of the published volumes.

Because of delays in production of cards by the computer, it was not until November, 1962 that the section could make a positive start on production of tables of results. When in full production the section employed a higher executive officer, four executive and four clerical officers and two senior machine operators. A typist was assigned to the section to prepare the commentary material on a manually operated electrical typewriter.

The production of the county series of reports was completed by February, 1964 and the national reports by December, 1966.

Computer processing

(a) General plan

Once programmes (instructions to the computer) had been written the scheme was first to convert punched cards to magnetic tape to form the input data for the machine. Those data were edited within the computer to ensure that each item for a particular person was compatible with other items. The computer was programmed to look for such incompatibilities and queries were raised automatically. When the input data was fully edited compilation programmes were used to extract sets of statistics from the data. These statistics were then arranged by table production programmes, the output from which was converted back to punched cards to form the input material for producing typed copies of the tables on the cardatype machines. (See page 38).

(b) Editing

Two edit programmes were written for both the 100 per cent data and the 10 per cent data. The first programme was designed to check the validity of the codes (e.g. no marriage later than April, 1961) and ensure that separate codes were compatible with each other (e.g. no married person under the age of 16). Any faults of this kind which were found by the computer were printed out for verification and, if necessary, correction by the editing staff at Titchfield (see pages 31 and 32). The computer also produced messages for any situation which was improbable or occurred rarely (e.g. persons over the age of 95 years) so that the information could be verified.

This first edit produced a partially edited data output tape containing all the original data with minor modifications. Information from correction cards produced at Titchfield was fed into the computer and the second edit programme run. This had the effect of substituting the correct record for an incorrect record held on the partly edited tape, at the same time checking as before that the new data were compatible and valid. This process was repeated until a fully edited output tape was obtained. From the output tape a new set of punched cards was produced, which showed the 100 per cent information for each person in the 10 per cent sample. At Titchfield the cards were completed by punching the codes applicable for the 10 per cent information (see page 34). Those cards were subjected to a second series of edits similar to those described above, this time to discover faults in the 10 per cent information. These processes were complicated by the need to check the compatibility of occupation with industry.

Editing was carried out on convenient blocks of population of about two million persons. When the editing of a whole block was completed a sorting programme arranged the sets of records for enumeration districts into the order needed for further processing.

(c) Compilation

The object of compilation was to convert the data on the fully edited tapes into statistics. The number of counting cells set up in the computer for this purpose ranged from 850 to over 5,000. Some 20 compilation programmes were written to instruct the computer in these operations. When each run was completed the output tape provided a mass of statistical information that could be drawn on to provide tabulations.

During the running of the first compilation programme certain characteristics of the 10 per cent sample were compared with the population as a whole. This operation helped to check the validity of the sampling procedure.

(d) Table production

The next stage was to convert the output from the compilation programmes into figures required for the various cells which were to appear in the published tables. Each table required a separate programme, some 250 such programmes being produced. The output from these programmes consisted of a further batch of tapes which were converted into sets of punched cards for each table. Careful specification was needed for these programmes to ensure that the cells for the tables appeared in the correct positions for publication and that requisite totals and rates were produced. The output also showed the names of areas (in punched form) to which the figures related and other information to enable the cells to be identified. The punched cards produced in this way were passed to Titchfield where the typed copies were produced.

(e) Staffing

The job of writing the programmes for the computer was a most complex task. Staff were chosen for this work after success in an aptitude test and a course of instruction which followed. A period of six or more months training was necessary. With computer time at a premium the staff could rarely work normal regular hours and in the early stages night work was often performed.

Initially only programming staff were employed at the computer centre but later the many routine jobs were delegated to other executive and clerical staff. Such tasks included management of the tape library and negotiations with the R.A.P.C. for time on the computers.

Publications

The tables in which the census results are embodied were fully discussed in draft with the Departments principally concerned. Full consultation was also maintained with Scotland in order to obtain the maximum degree of comparability in the main census results throughout Great Britain. Northern Ireland was kept fully informed on tabulation proposals with the same objective of general comparability. The census authorities in the Isle of Man and the Channel Islands requested the Registrar General to produce their Census Reports, which so far as relevant were on similar lines to those for Great Britain, on an agency basis.

- (a) The *Census 1961, England and Wales, Preliminary Report*, published in June, 1961, contained a general note on the taking of the census, some brief preliminary statistical commentary and provisional figures of the population, private households and private dwellings for all local authority areas (counties, boroughs, urban and rural districts) regions, conurbations and New Towns.
- (b) The *County Reports* comprised the statistics of local interest which were collected on a 100 per cent basis. The subjects covered are population and acreages of local government areas; distribution of the local populations according to sex, age, marital condition, birthplace, citizenship and nationality, private households and their size distribution, the buildings, dwellings, and rooms in which they live, the tenure of their accommodation and certain household arrangements possessed by them; institutions of different type housing various categories of non-private population. This series does not contain any information which was collected on a 10 per cent sample basis and therefore does not include distributions of the population by terminal education age or by social class as were included in the corresponding series of the 1951 Census. The series was published between June, 1963 and April, 1964.
- (c) The *Report on Scientific and Technological Qualifications* gave statistics of persons with those qualifications and the occupations and industries in which they work. This Report was published in October, 1962 on a 10 per cent sample basis and related to Great Britain.
- (d) The *Report on the Welsh Speaking Population* gave statistics derived from the question about speaking the Welsh language addressed to those enumerated in Wales and Monmouthshire. This Report was published in September, 1962.
- (e) The *Usual Residence Tables*, published in October, 1964, compared the enumerated census population in local areas with the population usually resident in those areas and also gave the numbers enumerated who were usually resident outside England and Wales classified by country of usual residence and by age.
- (f) The *Age, Marital Condition and General Tables*, published in November, 1965, mainly comprised summaries of the information given in the County Reports on local population, age and marital condition, with the various categories of non-private population.

- (g) The *Birthplace and Nationality Tables* mainly comprised summaries of the information given in the County Reports on birthplace, citizenship and nationality. This Report was published in September, 1964.
- (h) The *Housing and Household Composition Tables* included summaries of the information on housing and private households given in the County Reports, together with more extensive tabulations for England and Wales. The Housing Tables were published in three volumes between January and March, 1965 and contained tables of buildings, dwellings and households, tables of tenure and household arrangements and summary housing indices. The Household Composition Tables, which were published in December, 1966 provided figures on the composition and the social and economic characteristics of households and families and the types of person included in these groups on a 10 per cent sample basis.
- (i) The *Migration Tables* gave statistics of the numbers and characteristics of people who changed their usual residence in the year before Census Day; details of their age, marital condition, socio-economic group, occupation and industry were given together with similar information about the remainder of the population classified by the length of time they have lived at their present usual residence. Numbers of people moving were also given for local areas with some details for larger areas. These tables were on a 10 per cent sample basis. The Report was published in September, 1966.
- (j) The *Workplace Tables*, showed the population resident in one area and working in another, the units of area being boroughs, urban and rural districts and New Towns. This Report was on a 10 per cent sample basis. It was published in June, 1966.
- (k) The *Occupation Tables*, published in January, 1966, gave statistics of the occupied population based on their personal occupation (classified according to the Classification of Occupations, 1960) including statistics for usually resident populations of the larger areas, and with reference to age, marital condition, employment status (manager, employer, etc.) and socio-economic group. These tables were on a 10 per cent sample basis.
- (l) The *Industry Tables* gave statistics of the occupied population based on the branch of economic activity to which their occupations contribute with identification of employment status categories, age-groups and married women, the branch of economic activity units being those of the Standard Industrial Classification. Statistics of local populations were based on the area containing the place of work. These tables also included an analysis of each important industry or group of industries showing the principal occupations which contribute to it. These tables were on a 10 per cent sample basis. The Report was published in June, 1966.
- (m) The *Education Tables* gave figures relating to the terminal education age of persons resident in local areas and, for England and Wales and the regions and conurbations, classifications by age and by occupation. These tables were on a 10 per cent sample basis. The Report was published in February, 1966.
- (n) The *Fertility Tables*, published in October, 1966, gave statistics derived from the questions on date of marriage and number of children which were put to women who had ever been married.
- (o) The *Commonwealth Immigrant Tables* gave statistics about the demographic, social and economic characteristics of people enumerated in the six conurbations who had been born in the West Indies, India, Pakistan, Africa (excluding the Union of South Africa), Malta and Cyprus. These tables were on a 10 per cent sample basis. The Report was published in September, 1965.
- (p) The *Greater London Tables* were published in September, 1966 following the establishment of a Greater London Council area and the division of this area into the City of London and 32 London Boroughs.
- (q) The *Great Britain Tables*, published in December, 1966 contained statistics on population, birthplace and nationality, housing, household composition, migration, occupation, industry, education and fertility for Great Britain as a whole.
- (r) The *Index of Place Names*, published in November, 1965 gave the location and the census population of places with defined boundaries.
- (s) *County leaflets*. These contained tables giving the population by sex and the total numbers of households

and dwellings for each of the counties in turn. The figures were published in advance of the main series of County Reports over the period December, 1962 to October, 1963.

- (t) *National leaflets*. These were published in advance of the main volumes and contained the basic national and regional tables on household composition, migration, occupation and industry.

Unpublished information

The information published in the Census reports is no more than a selection of the potential total. The tabulations selected as significant could almost always have been designed to give greater detail, either by introducing smaller units of area or additional categories or age-groups. Special areas such as large homogeneous housing estates not delimited by local government boundaries, might be the subject of detailed social or medical investigations.

In July, 1961 a circular was sent to local authorities, universities, research organisations, Government departments, and other interested bodies advising them of additional tabulations that could be obtained. Largely, these were tabulations in something of the detail accorded to larger areas and relating to wards, civil parishes and enumeration districts. Considerable use was made of these facilities. Special programmes were prepared for the computer enabling the required statistics to be produced easily and economically.

To meet the needs for unpublished information there is power under Section 4(2) of the Census Act, 1920, to satisfy, on repayment of cost, any reasonable demand for statistical information from the Census which is not covered by the standard census programme. The extent to which this provision has been used is indicated by the payment to the Department of £32,000 up to the end of the financial year 1966/67.

Accommodation and staffing

(a) Location and accommodation of the Census staff

The general planning and administrative control of the Census was conducted from Somerset House, London at the Headquarters of the General Register Office,

Existing accommodation at the Victoria Hotel, Southport, (where a large branch of the Department is located), was used for the planning of enumeration districts. The small rooms in the hotel were unsuited for the handling of the large unwieldy maps used for the planning; at times planning was carried out on the floors of the rooms.

The main accommodation of the Census Office was in a former Royal Air Force camp at Titchfield, some four miles from Fareham, Hampshire, and about 75 miles from London. Although, outwardly, the wooden "spider" blocks had an uninviting appearance, the various structures on the site proved ideal for the processing of the Census information. With all accommodation at ground level movement of schedule volumes was facilitated. Clerical staff were housed in 14 interconnected huts, which had been living quarters for service personnel, and which had been well adapted for office work. The corridors, unfortunately, were too narrow for easy mobility of the trolleys for carrying the schedule volumes from one section to another.

The bulk of the punching staff were in one large room (the former N.A.A.F.I. canteen) which had been specially sound-proofed and the remainder were in a somewhat smaller room leading from it. These conditions greatly assisted control of the punching staff and contributed to the high outputs attained. Other machine sections were conveniently sited adjacent to the punching rooms.

An existing brick-built building proved ideal for storage of schedules. It was directly connected to the huts through a specially constructed covered way which assisted in the movement of the volumes. The former airmen's mess provided ample facilities both for a staff canteen and social club room.

The computer installation was some 22 miles from Titchfield, at Worthy Down, near Winchester. For the most part, makeshift office accommodation was provided for the programming and clerical staff, the installation being shared with the Royal Army Pay Corps. Staff were working within the bounds of a military camp and shared the amenities provided for other civilian and service personnel.

The separation of the two units concerned with processing the Census information was inconvenient, but this was offset to some extent by the maintenance of a daily van service between the two sites.

(b) Staff

The planning staff in London reached a maximum of 24 persons early in November, 1960 after which transfers of staff to Titchfield and Worthy Down began to take effect. Much of the executive staff were

employed on programming duties for the computer. The work connected with the classification of occupations and industries employed a small section of 2 executive and 3 clerical staff. The general planning staff was augmented in the early part of 1961 to manage the distribution of schedules and other supplies, but apart from this period, 3 executive and 5 clerical staff were employed on this work.

In Southport a maximum staff of 5 executive officers and 52 clerical officers and assistants were engaged on the planning of enumeration districts. This staff began to disband in February, 1961, some of the officers transferring to Titchfield.

For the processing work at Titchfield, a maximum staff of 337 was reached in December, 1961. A Chief Executive Officer was in overall control of both Titchfield and Worthy Down. At Titchfield there were also two senior executives, 30 other executive staff and the remainder clerical and machine staff. There was little difficulty in obtaining the majority of the clerical and machine staff of a reasonable standard, from local sources.

Most of the staff at Worthy Down had received specialised training in programming duties for the computer. It was necessary to employ 5 higher executive and 13 executive officers and 11 other grades on this work. The Census work on the computer was supervised by a senior executive officer.