

With Census Day 2011 approaching fast, **Edward Higgs** reveals how Britain's statisticians met the Herculean challenge of producing an accurate survey of the working population in the 19th century ➤



An official takes the census aboard a ship in West India docks in 1861. From 1841, censuses helped the government calculate everything from the size and distribution of the population to the contrasting death rate in each of the hundreds of occupations

THE TAKING of a census is probably the biggest single administrative exercise carried out by a modern state, with this year's British version projected to cost nearly half a billion pounds. Much the same could be said of the 2011 census's Victorian and Edwardian

predecessors. However, the census-taking authorities of that period lacked both a permanent organisation and also modern computer systems. So how, for example, could the 2,432,346 individual occupational descriptions given in the raw returns in 1911 be reduced to the 400 or so headings that appeared in the published tables in the census reports? The term 'farmer' might be simple to handle but what did one do with a bulldog burner, a cupper, a dung boy, a fat lad, a Lucifer woman, a knacker, a nymph of the pavé, or a sad iron maker?

Such data-handling problems had long exercised those responsible for organising the British censuses. The early enumerations of Great Britain, held at ten year intervals from 1801 to 1831, were administered by John Rickman, a clerk of the House of Commons. Rickman could manage the data returned because he only collected simple head counts of the population from parish officers. However, things changed on his death in 1840, when census-taking came under the control of the General Register Office (GRO) in London.

The GRO was established in 1837 to supervise the new civil system for registering births, marriages and deaths. The whole of England and Wales was divided up into registration districts, and superintendent registrars were appointed for each, with ordinary registrars under them responsible for sub-districts.

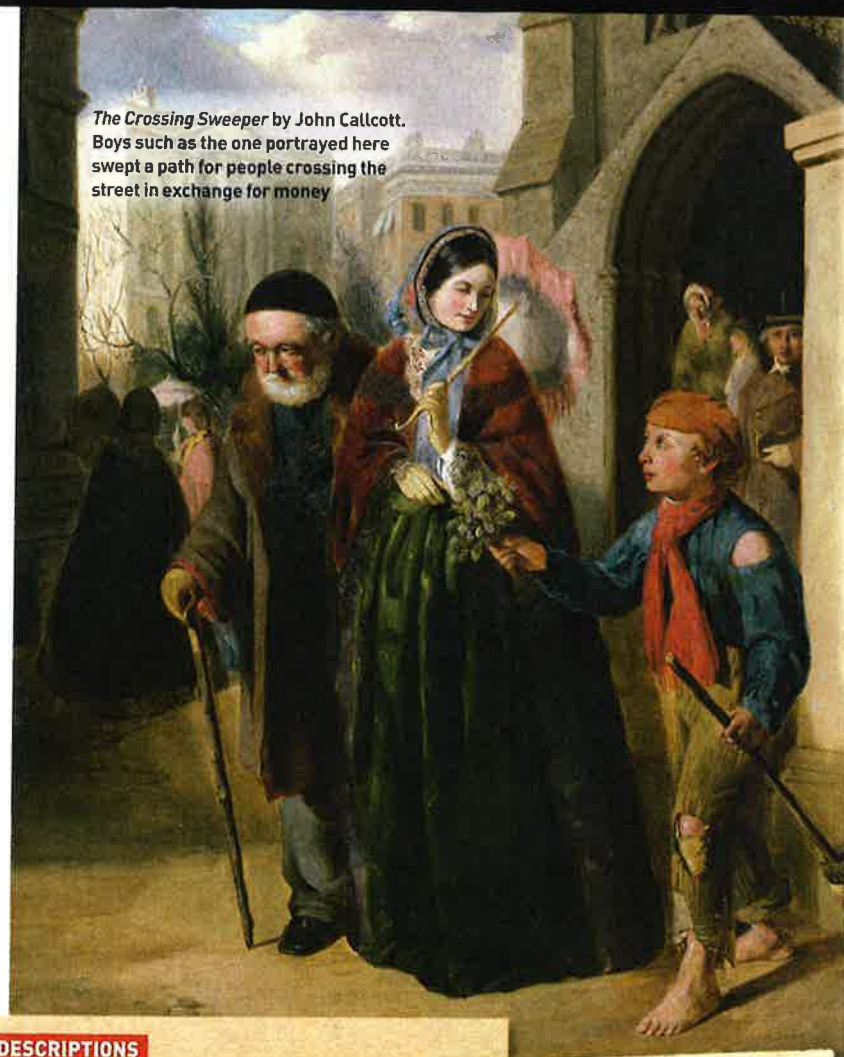
The GRO maintained a central 'database' of copies of the certificates of registration of vital

Dung boys kept streets clean by collecting refuse in a pan

events issued by the local registrars, from which it produced reports on medical and demographic trends. A key element in this process was the analysis of cause of death data supplied on death certificates, which helped underpin both advances in medical science and public health. The GRO's first superintendent of statistics, William Farr, was at the forefront of the development of medical and sanitary statistics from his appointment in 1839 to his retirement in 1879.

Personal details

From the census of 1841 onwards, the GRO wanted to collect far more data than Rickman had ever handled. Its wider interests meant that it sought to amass information on the size and distribution of the population, on housing, household structure, and on the characteristics of individuals: name, marital status, relationship to household head, age, sex, occupation, birthplace, medical disabilities, and so on. The census produced important statistical information in its own right but it was also the basis of much of the GRO's medical and demographic work. For example, knowledge of the size of the population allowed the GRO to



The Crossing Sweeper by John Callcott. Boys such as the one portrayed here swept a path for people crossing the street in exchange for money

ODD JOB DESCRIPTIONS

Dung boy

This was a term for a road sweeper who kept streets clean by collecting refuse (including animal manure) in a pan with a hand brush, and removing it to bins. Such workers first appear in the classification for 1881 in the Order 23, "Persons Working and Dealing in Refuse Matter" under the sub-order for "Scavengers, Crossing Sweepers". By 1911 the equivalent category, "Gas, Water, Electrical Supply and Sanitary Services (21.2.2)", reflected the move of such work from the private sector into local government.



calculate national, local and cause-specific death rates; and age and occupational figures enabled it to produce mortality statistics and actuarial life tables for particular age groups and trades.

This required completely new processes for collecting census data. Thousands of enumerators were employed by the local registrars to hand out millions of household schedules. Once householders had filled in the necessary particulars, they were collected by the enumerators, who copied the schedules into special books for dispatch to London. This was a vast business in its own right, only made possible by the wonders of the new Victorian postal service, the internet of its age.

But how was all this material to be processed? Some relief came after 1855 when Scotland set up its own GRO, but the returns for England and Wales that were forwarded to London were still voluminous.



This 1871 illustration shows an awkward encounter with a prostitute. The term 'prostitute' was conspicuous by its absence from Victorian censuses.

ODD JOB DESCRIPTIONS

Nymph of the pavé

This was a euphemism used for a prostitute, along with many other terms found in the manuscript returns – 'fallen', 'unfortunate', 'gay', and so on. Tens of thousands of women sold their bodies in Victorian England, yet there are no women described as 'prostitutes' in any of the census tables; Victorian prudery dictated that such women did not exist. Perhaps they were regarded as unoccupied. Or maybe they were hidden somewhere in the early censuses in Order 5 under "Persons Engaged in Entertaining, and Performing Personal Offices for Man", ie domestic service.

The Office had made similar protests to the Treasury in 1861 and 1871.

These temporary clerks, and the GRO's established staff, had only simple, manual techniques to undertake the vast task of data processing. Until 1911 the GRO's clerks had to add up and present results via the use of tabling sheets and the 'ticking' method. For example, in the case of occupational abstraction by age, the tabling sheets were large pieces of paper, about a yard across, with occupational headings down one side and age ranges across the top. These headings were ruled across the sheet, creating a matrix of boxes into which the census clerks placed a tick for an occurrence in the returns of a person of the relevant age and occupation.

Plainly, such a system could not handle thousands of different occupations, so the headings had to be condensed to a few hundred, and occupational dictionaries were produced to allow clerks to determine under which broad heading an occupation was to be included. Clerks then added up the number of ticks in each column and placed the results in another series of columns on another sheet. This produced the raw numbers of people under particular occupational headings within particular age ranges. ➤

The London GRO had precious few hands to undertake this task. In fact, for most of the 19th century it had fewer than 90 staff, and of these never more than a quarter were employed in the Statistical Department, which undertook the tabulation of data.

Since in the Victorian and Edwardian periods parliament usually only passed the necessary Census Acts some nine months before Census Night, there was little time to hire, organise and train such staff. The Census Office didn't hire full-time staff until after the First World War (when a permanent Census Act finally came into force) and so was forced to employ temporary clerks – inevitably the dregs of the clerical profession who could not get regular employment. We can get an indication of their quality (or lack of it) from an official complaint lodged by the GRO with the Treasury in 1889. Referring to the previous census, it states that:

There were altogether 98 clerks supplied to the Census Office, by Treasury nomination, independently of some few writers transferred from the GRO. Of these 98, four were in such bad health that no work could be got from them, and two of those died. Of the remaining 94, no less than 49, or more than a half, have marked against their names in the private register kept as to their conduct and qualifications either 'indifferent', or 'bad' or 'very bad'.

MARY EVANS/DREAMTIME

ODD JOB DESCRIPTIONS

Bulldog burner

This was not something of concern to the RSPCA as a bulldog burner was a man who roasted tap cinder from puddling or blast furnaces (pictured right). This made bulldog, a 'refractory' slag for lining puddling furnaces making wrought iron or steel. Refractory slag retained its strength at high temperatures. The occupation first appeared in the classification for 1881 in order 21, sub-order 8, "Persons Working and Dealing in Various Mineral Substances: Iron and Steel".



The tedium of the work drove one clerk mad, and he had to be removed to Bethlehem Hospital for the Insane – the dreaded Bedlam

Clerks created sheets in this manner for each local registrar's sub-district. In order to produce tables for superintendant registrars' districts, they had to fold the sheets for sub-districts at the column to be totalled, and then line them up so that they overlapped. They then read them off on to district sheets. Figures were transferred from district to county, and then to national sheets in a similar manner.

This was fiddly work, and the constant leaning over tables, in both senses of the word, proved exhausting, necessitating frequent stops for rest. In 1856 the GRO reported to the Treasury that one clerk had just completed "tabling the ages and diseases of the females of Lancashire 1854, comprising 310 abstract sheets containing an aggregate of 29,063 'ticks'", and that this had taken him four days.

Clerks must have been subjected to equally tedious work in the GRO's census office. Working for hours on end in poorly lit rooms in dark, smoggy Victorian London was a recipe for poor eyesight – and, on occasions, poor mental health. The tedium of GRO work drove at least one clerk mad, and he had to be removed to Bethlehem Hospital for the Insane – the dreaded Bedlam. The lot of a Victorian census clerk cannot have been a happy one.

In the tables in the census reports, the occupational headings were further grouped into various orders and sub-orders. In the mid-Victorian period, the GRO based the major groupings on the materials that people worked with in their jobs: working with metals, working with vegetable matter, working with animals, and so on. This appears to have been because the GRO thought that working with similar materials meant that people had similar illnesses, and thus similar life expectancies.

William Farr even thought that the materials that people worked with influenced their character. This seems odd today but may have had something to do with his reading of the Greek classics, which contain similar ideas. Later, the GRO introduced more modern, economic classification systems, and shifted occupational headings – and the individual occupations within them – about the census tables.

Such manual methods came under increased strain in the early years of the 20th century, as new enquiries were

ODD JOB DESCRIPTIONS

Lucifer woman

Nothing Satanic but a female who made or packed Lucifer matches made of a mixture of antimony, sulfide or stibnite, potassium chlorate, gum, and starch. White phosphorous was also added to the mixture to hide the smell but this caused diseases such as 'phossy jaw'. Lucifer-making only appeared in the classifications for 1901 and 1911 under Sub-Order 15.2, "Persons Working and Dealing in Chemicals, Oil, Grease, Soap, Resin: Explosives and Matches".

A woman sells Lucifer matches in the streets, c1865



A young worker lubricates a 'hutch' axle at Lady Victoria Colliery in Midlothian

ODD JOB DESCRIPTIONS

Fat lad

This term refers to someone who worked in a mine greasing not only tub and bogie axles, but also the sheaves and drums guiding haulage ropes. This must have been a nasty job in the dark. The occupational term only appears explicitly in the classification of 1911 in sub-order 9.1.8 for "Iron Ore Mine or Quarry, Ironstone Mine, Red Mine, Heamatter Mine".

ODD JOB DESCRIPTIONS

Knacker

Knackers slaughtered horses, or removed dead horses to yards, where the carcasses were cut up for commercial purposes, eg to be sold for cat meat. Hence the origins of the term 'to be knackered'. The occupation can be found in every 19th-century census. In 1851 it appears in Order 10 for "Persons Engaged about Animals", and ends up in 1911 in Sub-Order 22.2.4, along with "Catsmeat Dealer", in the order for "Other General, and Undefined Workers and Dealers".



An old horse watches its companion being carried away to the knacker's yard in this illustration from c1840

MARY EVANS/SCRAN



ODD JOB DESCRIPTIONS

Sad iron maker

Fortunately, this is not a description of a depressed metal worker, since a 'sad iron' was merely another name for a flat iron. The history of the occupation's classification in the census is almost identical to that of the bulldog burner, even though one made a raw material and the other a finished product. The term 'Sad Iron Grinder, Maker' first appears in the classification for 1881 in order 21, sub-order 8, "Persons Working and Dealing in Various Mineral Substances: Iron and Steel". By 1901 the job had been moved to the more specific category 10.1, "Metals, Machinery, Implements and Conveyances: Iron Manufacture".

added to the census. The GRO was anxious to ask questions about marital fertility, and the industry, as well as the occupation, in which people worked.

In order to analyse the new data that was gathered in the 1911 census, the Office introduced Hollerith machine tabulators. These had been invented in 1890 for the US census of that year, and were soon appearing in state statistical offices across Europe. Machine tabulation broke data analysis down into two stages. First, information on individuals was punched on a card as a series of holes, and secondly, the information on the cards was read electronically.

In essence, pads with spring-loaded pins were brought down on individual cards, and if the pins passed through a hole, and connected with a backing plate, they completed a circuit through which electricity passed to move the dial of a counter on one position.

In the case of complex calculations, the dials could be wired up via relay keys. This enabled the GRO to separate data capture from data analysis, as it could now analyse the data in differing ways, and as many times as required.

At a stroke, machine tabulators had removed the bottlenecks in the GRO's manual system of data processing. Suddenly, the GRO was able to access a whole new world of possibilities for statistical manipulation. **II**

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Hard labour: This 1872 wood engraving shows men engaged in metal working

JOURNEYS

Books

► **Making Sense of the Census Revisited: Census Records for England and Wales, 1801–1901** by Edward Higgs (*The National Archives and Institute of Historical Research, 2005*)

Website

► The Online Historical Population Reports (OHPR) collection: www.histpop.org

TV

► BBC One is marking Census Week in March with a drama, **32, Brinkburn Street**, and **100 Years of Us**, which traces how the UK has changed from 1901 to 2011



H historyextra.com

On the podcast

Edward Higgs talks censuses in the March podcast (online from 4 March) www.historyextra.com/podcast-page