ROCC systems have been installed at the rate of one a month since 1983 and the project was completed on time in 1986. "I feel that the management support team have come home to roost," said Douglas Ball – computing services manager at the Prescription Pricing Authority, Newcastle upon Tyne, pictured by the River Tyne.

ROCC: CURING A 334 MILLION A YEAR
PRESCRIPTION HEADACHE

**"Better to hunt in fields, for health unbought,
Than fee the doctor for nauseous draught,
The wise, for cure, on exercise depend;
God never made his work, for man to mend."**

MODERN man's view on how to stay healthy, has changed a bit since Dryden's day. Doctors and pharmacists currently prescribe/dispense some £1600 million worth of drugs a year to those of us who feel we still need more than a breath of fresh air to cure our headache. For the patient it is simply a matter of taking the prescription to a pharmacy and collecting the medicine. For the chemist however, there is the matter of payment to be considered for drugs dispensed, since only 30 per cent of patients pay charges. (OAP's, children, those on supplementary benefit are exempt.) This is where the Prescription Pricing Authority (PPA) comes in.

The organisation, part of the National Health Service, is able to provide information on the use of drugs to medical practitioners to assist them in determining effective prescribing habits. Its function is to receive every prescription form tendered to any pharmacy in England, to calculate the value of each, and to send schedules of payments to the family

Britain's largest data capture system

practitioner committees.

In terms of paperwork, that is a formidable task – there are currently around 334 million prescriptions issued a year. Each one has to be accurately deciphered, checked for a variety of conditions, and priced.

To do all this work, the PPA currently has a staff of 2000, organised in 11 centres based in the North of England. They process between them all the forms produced by the 11,000 contractors, and 24,000 doctors in the country, which adds up to the largest data capture system network in the UK and, possibly, Europe

using a ROCC computer system.

Forty-two ROCC computers supporting 1600 workstations make-up the system connected via a sophisticated communications network to six mainframes.

There are about 17,000 different medicines, many of them available in several different pack sizes which adds up to over 87,000 different items. Processing the information is a skilled clerical task that used to be done on a manual basis.

The decision to computerise followed as a result of a backlog on the production of payment schedules for pharmacists.

A top level consultant (R.I. Tricker, the director of the Oxford Centre for Management Studies) was called in to assess the situation. The pricing operation came out of it with high marks for efficiency but computerisation was recommended in order to improve the exploitation of the information database. Until this point there was no real pressure to change the manual system as it worked well.

Three different concepts were evaluated; an OCR method, an interactive menu-driven method and a sophisticated data capture method, using specially designed numeric input drug codes. This latter method proved to be the most cost-effective solution.

The forms arrive monthly in batches – from 1 up to 15,000 at a time – between the 1st and the 15th of each calendar month, for the production of payment schedules on the 16th of the month. Late arrivals create additional work as they have to manually calculate the advance payment. The parcels arrive in all shapes and sizes.

Initially 13 ROCC workstations were purchased in 1981, results proving so successful that a decision was taken to computerise one whole division whilst evaluating the implications of computerising the whole of the PPA.

"ROCC gained from the experience, too, developing equipment in line with PPA's requirements".

"ROCC gained from the experience, too, developing equipment in line with PPA's requirements," said Douglas Ball, computing services manager. "ROCC could, for instance, offer the facility to cope with batches containing up to 15,000 records (whereas a normal data capture batch would be 200/300 records). ROCC also rewrote its early software to reduce screen response time from 28 seconds down to two seconds."

It is not a simple keying in task. Staff have to read difficult handwriting and apply complex payment rules accordingly. Firstly, it must be decided that what the doctor prescribed was dispensed; secondly, if different, was the dispensing acceptable and, thirdly, whether according to the rules a third description may have to be keyed instead.

They must also look for forgeries, unusual items and stolen prescriptions.

On average one prescription is keyed in every 15 seconds. Nine seconds are spent in decision making and 6 seconds in keying. Because of the sheer volume of work, one extra keystroke per prescription can cost the PPA an extra £250,000 on the £18 million wages bill per annum.

There are up to 61 items of information on the prescription form which the staff must be aware of. It's the correctness and clarity of these items which determines the accuracy and speed of pricing.

The flow of work on the ROCC data capture equipment can be divided into five categories: a) general pricer; b) higher clerical; c) quality control; d) technical check; e) supervisor. About 4% of prescriptions are outside the remit of the general pricer and are left for the higher clerical officer (HCO) to process.

Staff are paid on output and accuracy.

It used to take two years

Sixteen ROCC multiuser systems are installed at the Prescription Pricing Authority's Newcastle headquarters. Picture shows part of a twin ROCC 2840 system which is under the control of standing (right foreground) Elizabeth Stobbart – divisional administrator. Also seen standing (background left) is the supervisor for this section, Edith Tyson.
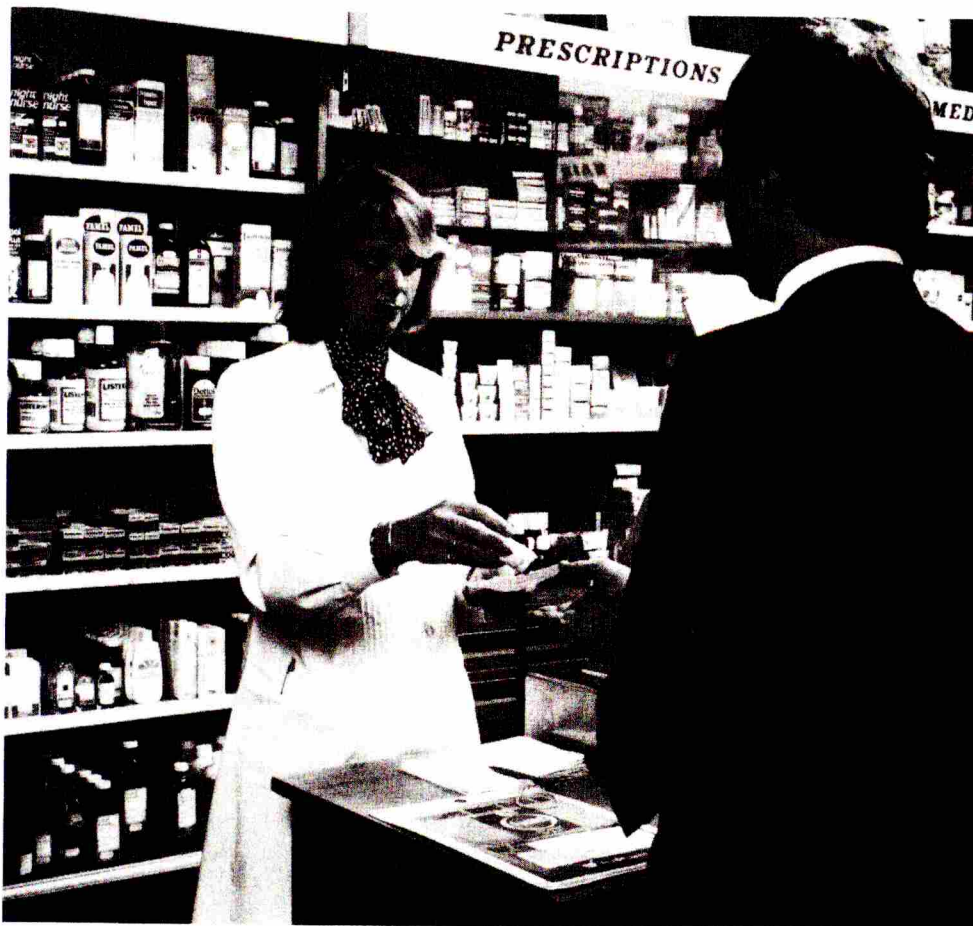
Where it all begins.

before a pricer was fully trained (now down to one year as a result of computerisation) and daily input rates in excess of 2000 prescriptions per day are now being achieved with agreed levels of acceptable inaccuracy of under 1%.

Typical problems encountered by the pricer include forms not sorted correctly in each group, illegible stamps, and notoriously, deciphering doctors' handwriting.

The higher clerical officer has access to the full drug and appliance files which contain approximately 87,000 different codes.

The HCO processes approximately 350 queries a day, such is the complex nature of the work.

ROCC systems have been installed at the rate of one a month since 1983; the project was completed on time in 1986 by which time over £7 million worth of hardware had been installed. "I feel the management support team have come home to roost," commented Ball. "They have spent three years travelling
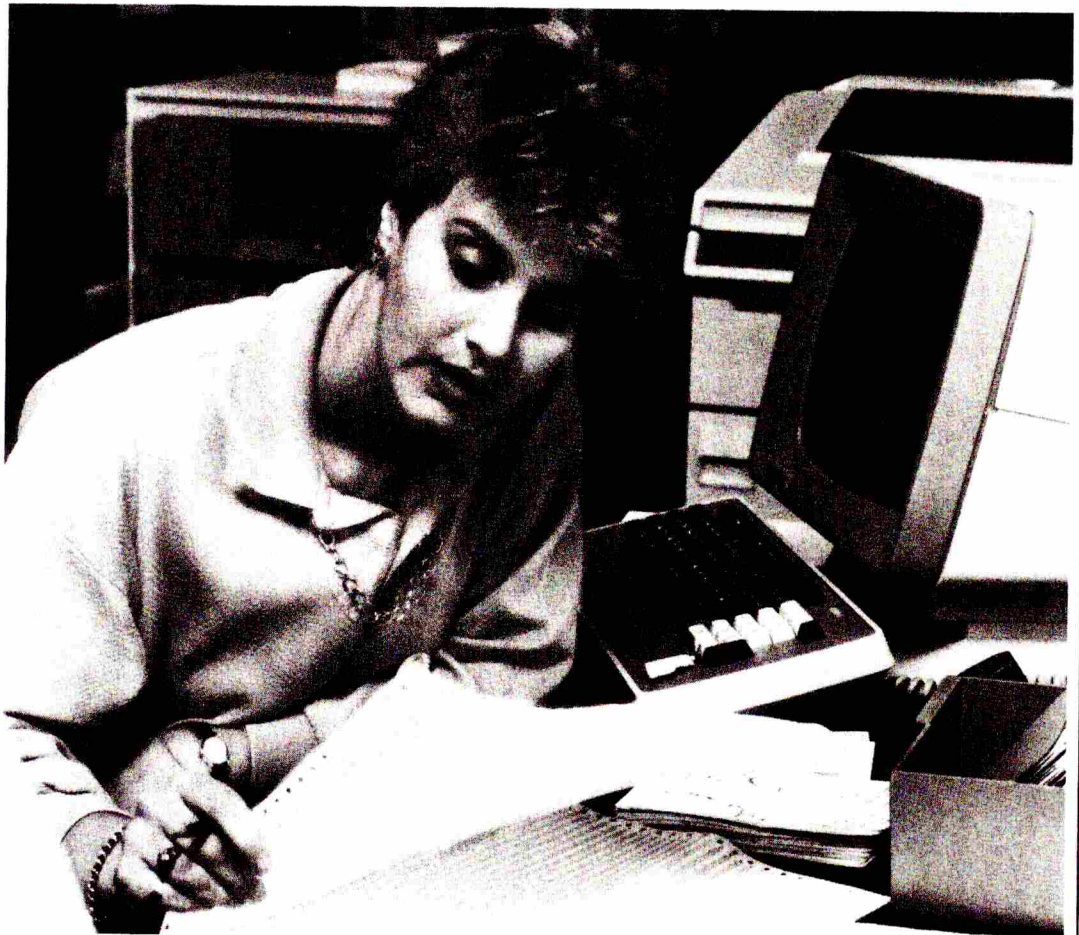
NHS prescriptions of a more complex nature and those that have to be returned to pharmacy contractors because of insufficient information are dealt with by the Prescription Pricing Authority's higher clerical officers. Pictured is Helen Hutchinson – HCO at the authority's Newcastle headquarters attending to a batch of queries.

around the country training staff on a rolling programme."

The data produced by these systems is currently transferred by tape to be processed on six Honeywell mainframes. It takes 6-8 hours processing per day just to read the 1.5 million average items transferred before processing can begin. Validation of data is carried out by the ROCC systems and on receiving a magnetic tape, the mainframes carry out further validation checks against the various master files.

ROCC systems have been installed at the rate of one a month since 1983

Thirty-six ROCC 2830 computers have been upgraded with ROCC's 300ns bit-slice processors, high performance workstations processors and the new WMS operating system.

The architecture of the system is based on a powerful 1Mb control processor with cache memory. The control processor via a high speed data highway controls a number of other dedicated micros which allow concurrent activity to take place without degrading the system performance. This system has to cope with 20,000 line of data capture code written by the authority's officers.

The ROCC systems are linked via a private network to the computer centre at Newcastle upon Tyne and the new information technology centre.

The pricing systems currently consist of approximately 100,000 lines of batch and on-line code developed by the authority's officers. There are still major projects being developed for implementation in the mid 1990s.

"We're now busy setting up on site with a total investment of £3.5–£4 million to provide prescribing information to doctors on a quarterly basis," said Ball.

You'd think that in his line of business Ball would be a staunch advocate of modern medicine: not a bit of it, he prefers Dryden's philosophy and even goes so far as to go marathon running!

The Prescription Pricing Authority organised in 11 centres based in the North of England, currently processes some 334 million prescriptions which are issued each year.

Picture shows Louise Bates – general pricer at PPA, Newcastle, about to input data from NHS prescriptions which have been dispensed by pharmacy contractors. The value of each form is calculated and schedules of payments are then sent to the family practitioner committees. The PPA is also able to provide information on the use of drugs to medical practitioners to assist them in determining effective prescribing habits.

ROCC computer systems are installed in 11 centres in the North of England

NEWCASTLE UPON TYNE (16)
TYNE & WEAR (4)
NORTHUMBERLAND (4)
NEWCASTLE (4)
DEVELOPMENT (2)
AUDIT (1)
ENGINEERING (1)

DURHAM (4)

WAKEFIELD (4)
BOLTON (4)
LIVERPOOL (3)
MANCHESTER (3)
SHEFFIELD (3)

WEST BROMWICH (3)