

# Approach Towards Rebuilding Old Dhaka

by Architect Mohibul Arefeen Khan

IN the recent years, specially after the independence of Bangladesh, vigorous rebuilding activities have been marked in the old portion of Dhaka city called old Dhaka. This so happened because of the rapid commercialisation of its neighbourhoods. The organic growth of the old city favours the commercialisation process which develops over various factors like tax abatement, rental advantage, absence of control mechanism, lack of proper intervention by legal authorities, ample opportunity to organise informal sector business enterprises etc.

Standard amidst negligence, deprivation, social-injustice. Now-a-days, the general impression or the image formed by experiencing the physical expression in all over old Dhaka is not what it appears to be. The emergence of Bangladesh enhanced the economic importance of Dhaka which became the capital. Rapid urbanisation process began to act due to the opening up of new trading horizons, scope of employment, tremendous migration from outside. The old Dhaka people did not keep themselves out of this opportunity of massing wealth by involving in the trend.

tion towards the modern education thus developing the level of thought process were highly discouraged. This was the scene almost down to 1971. The change of the scene brought Dhaka into lime light. Owing to the factors already mentioned a sharp tendency towards rebuilding is distinctly marked. Rebuilding is the process of building another structure in place of old one with a view to devising some objectives always better to the previous one. But what happens is confusion, a failure to establish dialogue between

tradition and modernity. The process of assimilation and synthesis between long-cherished thought base and already available modern technology as material fails considerably to produce something coherent and contextual. The tendency towards rebuilding is primarily governed by the monetary gain out of it followed by accentuating the building exterior to create a wealthy image in the community. The first thing that comes in the rebuilding approach is looking for the possibilities of how the scheme will fetch maximum revenue. This is somewhat solved indigenously by involving almost all the area of the site into the floor. To attain the greater flexibility in manipulating the space so created to desirable sites and accommodations a suitable structural system is sought. This process continues until the whole building in superstruc-

flexibility, RCC frame structure (Beam-column frame) is selected with 5' brick wall for the division of space. The module of the frame is usually determined by the shopping module developed indigenously by the nature of commerce to be accommodated. The ground floors usually are kept for the retail and whole sale shops and sometime for storage. The 1st and 2nd floors are rented to storage trading of flogs, banks etc. The upper floors are used for residential purposes accommodating requirements within the available grid system. Tendency towards creating



porary Dhaka city is the original entity of the historic Dhaka. For over 300 years until 1947, the overall urban activities remained concentrated in this part. Here neighbourhoods originated by housing different ethnic communities belonging to different cast, creed and trade. The volatile political environment of the region kept these people under ups and downs. The general mass mostly with low economic base earned livelihood by small scale business activities. They aspired for the elevation of the living stan-

Their value-judgment base was formed by the wealth-base they established. Their evaluation of the living environment is determined by its commercial implications. This self-confined communities hardly need any contact with the consistent intellectual advancement of human-mind in the form of art, music, literature. Exposure to and interaction with already established and recognised facets of art and culture were severely barred partly by themselves and partly by the groups they were ruled. Ori-

bricks, and sometime imitating them on cement using colour. Then comes the aesthetics. It is never thought that the formal expression might provide a good aesthetics. The aesthetic of the buildings concentrated on the face lift showing the power of wealth and the effort of establishment in the society. These attitude and approaches have been providing the continuous impetus to the old Dhaka physical development which show distinct characteristics. Most of the structures erected have six to eight stored foundation without any lift or fire fighting provision. Almost whole of the area in the site is taken under construction without any set back except when required for circulation or ventilation purpose. The configuration of the buildings take shape of that of the site. To get greater choice and

terraces by putting off one or two rooms in the upper floors is marked in most structures to get outdoor experience amidst high congestion. Roof-gardening is also done. A running verandah along the street facade is prominent in the upper floors to have view outside the building activities are natural in the process of development but it should always respect certain urban norms. But the question is this who will set this urban norms that will be respected and followed. The trend of the recent rebuilding boom in old Dhaka is mostly the lack of any contextual guideline from the concerned authority. Professionals like architect, planners, engineers, policymakers, local body and general public of the community should participate in a dialogue to evolve an appropriate approach fitting to the contemporary and future situation. Courtesy: POSTGRADUATE CENTRE, Department of Architecture, BUET Dhaka

# DNA Profiling May Unravel the Fate of the Romanovs

by Glyn Jones

THE technique of DNA profiling is to be used by a British forensic science laboratory to determine whether human bones exhumed from a burial pit in Russia in 1991 are indeed the remains of Tsar Nicholas II and other members of the Russian Imperial Romanov family murdered by Bolsheviks during the revolutionary wars in 1918. DNA samples extracted from the remains will be compared with genetic material taken from living descendants of the Romanovs, to see if they match. It is estimated the work will take from three to six months. Dr Peter Gill, biological sciences team leader at the Forensic Science Laboratories at Aldermaston, Berkshire, north of London, is in charge of the investigation.

Dr Ivanov will assist in the investigation, which is now being broadened in an attempt to determine once and for all whether the late Anna Anderson was, as she always claimed, the Tsar's daughter Anastasia and had escaped the massacre of her family. Samples of Anna Anderson's hair are being sent to Aldermaston for genetic analysis and comparison with the Yekaterinburg remains and other samples.

crushed by the piston-like action of a steel rod in a tube. Only one gramme is used at a time and the DNA is amplified to suitable proportions. It is extracted using conventional methods in a high salt solution with proteinase K and a detergent. Then the chemical processes to determine the sequences of the code come into play. Almost all the subsequent work is done with sophisticated state-of-the-art technology, a spin-off from the current international human genome project to identify all the genes in the human body. The DNA fragments are separated out by electrophoresis (using an electric current to isolate proteins by differences in the electric charge on the various protein molecules).

## Mitochondrial DNA

Explaining his work, Dr Gill likened the long molecule of DNA to a string of beads. There are four sorts of bead on the string — AGCT — the nucleic acids adenine, guanine, cytosine and thymine, components of the genetic code. The 'letters' go together to make 'sentences'. Separate individuals can have similar genetic sentences but there will still be distinct differences. Dr Gill will be using mitochondrial DNA (mitochondria are responsible for the cell's energy production), which is maternally introduced, meaning all the offspring will have the same code derived from the mother. 'Say mother's code reads 'Many had a little lamb', then the children's code would be the same. The father may have a different code, says, 'Black sheep white sheep'. That code will not be inherited by the children. But 'Mary had a little lamb' will be inherited and the daughters will pass the code on to their children as well. It goes right through the female line.

This is how we can determine whether this is the Tsar's family or not. We compare the results with the codes of the living relatives, who can be traced through genealogical tables. But the names of the descendants who are being approached are to remain confidential. 'We shall be using blood or hair samples and from these we can read off the mitochondrial code through the maternal line.' Different people will have different codes but the codes of closely related people (brothers and sisters for example) will be the same.

The process produces a coloured bar code in which the four letters AGCT emerge in four different colours. The sequences from the human remains will be matched with those from the living descendants. 'If we were looking for the code 'Mary had a little lamb', that should appear the same in the descendants. It will certainly give us a pretty good idea — we can't call it absolute certainty, but it would be a discrimination well down into the thousands, not millions. It will not discriminate between closely related people. We will have to do experiments using different parts of the bone and different bones and we shall have to have lots of controls because we are looking at such small amounts of DNA.

## Initial Contact

Russian scientists believe they have indeed found the Tsar and his family, identifying Nicholas and his wife Alexandra, granddaughter of Queen Victoria, by computer-matching the skulls with old photographs. Teeth and bones have also been examined by Russian forensic scientists. Now, the remains are to be put to the severest scientific test possible. Dr Gill, who has received the bones from Moscow, says his initial contact with the Russian authorities was at a conference in Adelaide, Australia, where he met Pavel Ivanov, a molecular biologist at the Moscow Forensic Science Laboratory. Dr Ivanov contacted him again about a year ago and asked if he would conduct the genetic tests. 'It all stemmed from that,' says Dr Gill. 'The Russians do not have the facilities to do it

## Automatic Matching

'We have to be very careful not to introduce any contaminants such as dust particles in the air. We work in cleanroom conditions, but there is no point in keeping the bones in a special store — after all, they have been in the ground so long already,' says Dr Gill. Much of the process is done by machine, with the results transferred to computer for automatic matching. The final results of course require human interpretation, one code against another. 'The whole process is very difficult to carry out. There is the danger of contaminants and there are many variables to watch.' There will be great interest in the results of the tests, and not only from the surviving members of the Romanov family, but from the many people for whom the mystery of the identity of Anna Anderson, which has been the subject of books and films, is one of the great tragic-romantic stories of the century.

## DNA Amplification

The actual testing is by a technique called polymerase chain reaction which can work with very small amounts of DNA. A bone fragment is made brittle in liquid hydrogen and

# Navcal Makes for Safer Landings

by Bill Pressdee

MANY aircraft passengers probably experience a few moments of foreboding before their flight touches down, wondering whether the airport landing system will perform satisfactorily, particularly in conditions of poor visibility. A high proportion of aircraft accidents do occur on landing, and some trepidation is therefore not unwarranted. The CAA requires airport navigational aids (navaids) to be checked periodically to ensure satisfactory operation. Now, a new calibration service for ensuring that airfield Instrument Landing Systems (ILS) are kept in optimum working order and meet the requirements of the United Kingdom Civil Aviation Authority (CAA), has been set up by Hunting Aviation Services of West Drayton, near London airport.

known as a localiser, sited at the far end of the runway, operating in the band 108.0 to 112.0 MHz, transmits azimuth guidance signals modulated to the left of the centre line at 90 Hz and to the right at 150 Hz. These guidance beams overlap so that an aircraft approaching along the extension of the runway centreline will receive equal signals when the aircraft is correctly aligned with it. Similarly, a glide-slope low-power UHF transmitter, sited near the runway threshold, operating between 329.3 and 335.0 MHz, establishes a guidance descent path at an angle between 2.5 and 3 degrees to the horizontal plane of the runway.

rolled to the centreline. The effect of course winds can be calculated and taken into account, enabling the course to be offset by the drift angle. Marker beacons are located along the runway approaches and beam signals vertically on 75 MHz. The outer marker, situated 4 nautical miles (7.4 km) from the runway threshold, is coded with continuous dashes, while the inner marker, situated at 3500 ft (1067 m) is coded with alternative dashes and dots. It is evident that a system entrusted with the safe landing of aircraft under a variety of weather conditions should perform satisfactorily at all times. This means there should be no

bility of interference from FM broadcasting. Regular calibration can assess such problems so that action can be taken to minimise them. ILS categories There are three categories of ILS. Category I is an approach procedure providing for an approach to a decision-height above touchdown (at which the pilot must initiate a go-round if not satisfied with visual reference) of not less than 200 ft (61 m), with a runway visual range (RVR) of not less than 2625 ft (800 m). Category II provides for an approach to not less than 100 ft (30 m) with an RVR of not less than 1310 ft (400 m).

ground equipment calibration services provided by the CAA could not meet the demand. Although the concept of a private contractor competing with the licensing authority was novel, early encouragement given by the CAA has resulted in licences being granted for calibration of ILS categories I and II, while approval to include category III systems is expected soon. Globe positioning system Low cost and low weight were major design criteria for the NAVCAL equipment and have been achieved using state-of-the-art technology. The low weight enables the airborne units to be carried on board a light aircraft and the ground units to be easily portable — both cost-effective measures. Globe positioning system (GPS) receivers on board the aircraft and at a temporary ground station sited at the runway threshold, allow simultaneous reception of positions to be correlated via a radio link to the aircraft, enabling a very accurate aircraft range to be computed — extremely important over the 4 nautical miles (7.4 km) from the outer marker to runway threshold. At the same time a ground operator trains a theodolite, linked to a lightweight CCD (charge coupled device) TV camera, on a light source in the aircraft, enabling the camera to lock on to and record the aircraft's changing angle of elevation on approach. Meanwhile, sensors on the aircraft monitor various ILS parameters, such as modulation depth of signal, which, together with the other measurements obtained, are stored by the computer for post-processing on the ground. Chart recorders are used for correlating results and a colour plotter to provide a customer record for the airfield.

Based at Shoreham-by-Sea airport, on the south coast of England, the service, NAVCAL, is contracted to approximately half the UK airfields fitted with ILS, and is now being offered for calibrating ILS systems overseas, on a fully operational or franchise basis. New landing system In aviation terminology, an instrument runway is one with a precision approach radar system (PAR), known also as a ground controlled approach system (GCA), or an instrument landing system (ILS), and first installed on airfields during the 1940s.

On approaching an airport, the pilot selects the localiser frequency and the correct glide-path frequency will automatically tune in. Provision is made for the aircraft to be vectored automatically to the ILS beam and intercept it at a constant angle, enabling it to be con-

changes in the orientation, shape or power of the guidance beams with respect to the geometry of the runway. For the frequencies at which the ILS system operates there is some susceptibility to reflections from nearby objects such as aircraft buildings, overflying aircraft and vehicles or aircraft on the ground. Reflections may bend and distort the guidance beam. The glide-path transmitter, for example, needs stable reflections from a large area of ground in front of the antenna to form the correct glide-path signal. Additionally, there is possi-

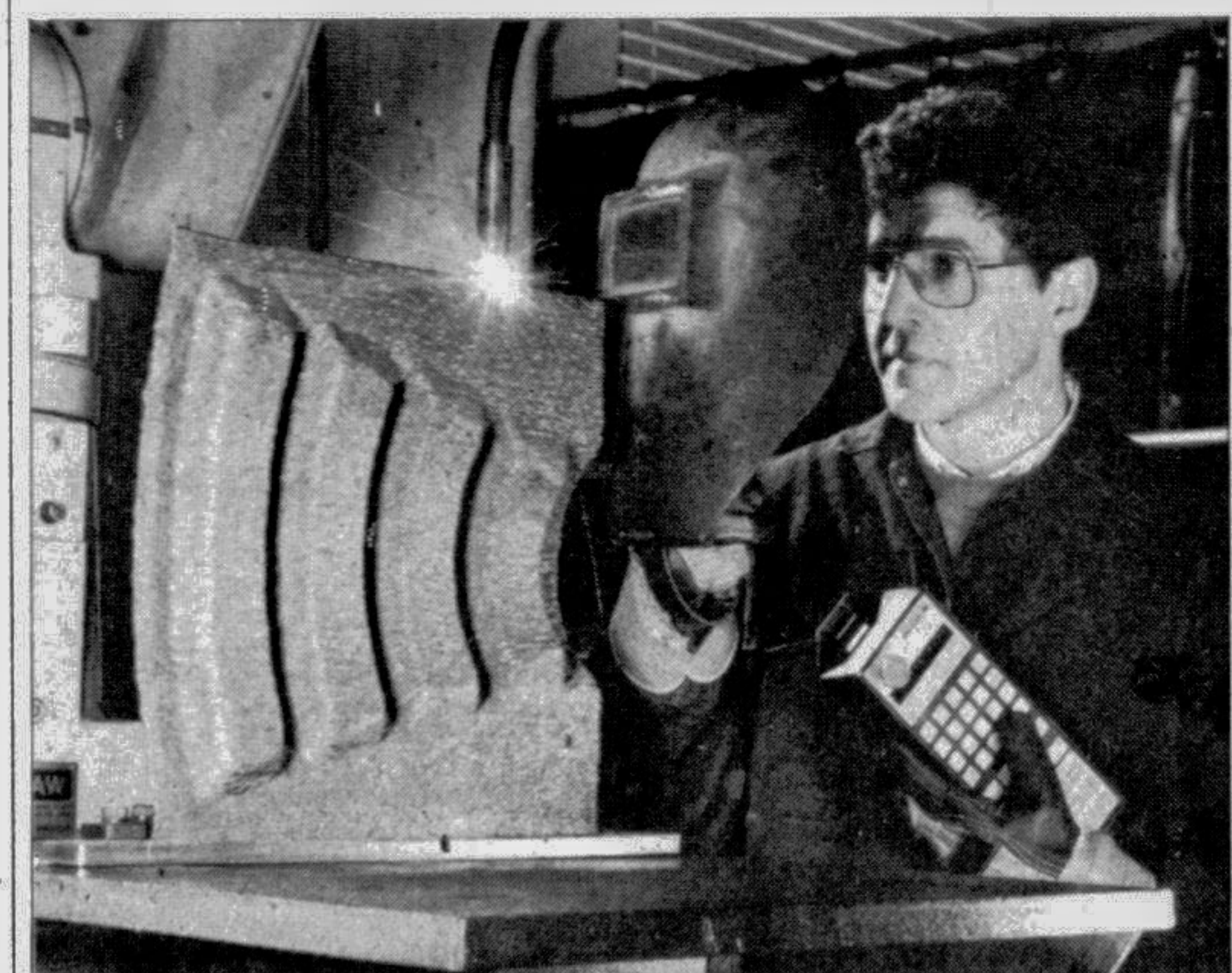
Category III does not specify a decision height and is split into three sub-categories: IIIA for which the RVR is 650 ft (200 m), IIIB for which the RVR is 500 ft (160 ft), and IIIC for which no RVR is specified. The NAVCAL system represents a fresh approach to calibration of ground-based navigational aids. Developed by Hunting Communications Technology in Hunting's Defence Division it has been taken over by sister company Hunting Aviation Services (HAS) in the aviation division. Market research by HAS showed that the requirement for

An operator positioned at the runway threshold trains a theodolite/TV sight at a light source in the calibration aircraft.

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# Prototype lead times cut from days to hours



REDUCING the lead time between the design and the key to winning orders for new business. A research project at Nottingham University, in the English midlands, allows component manufacturers to produce prototype metal parts in hours rather than weeks. Dr Phil Dickens, of the university's Department of Manufacturing Engineering, is shown here with a welding robot linked to a computer-aided design (CAD) package. The system can manufacture prototype components straight from 'screen' drawings.

Various techniques are now available which can transform a 3-dimension computer aided model into a real object. These techniques are collectively known as rapid prototyping. However, they are generally limited to producing parts in plastic, whereas many parts are required in metal. The project involves the use of a standard metal inert gas (MIG) welding system coupled to a robot to build up metal components layer by layer. Each layer represents a 'slice' through the component. The dimensions of each slice are sent to the robot by the CAD system.

Normally, it takes weeks to make a prototype. With the system developed at Nottingham University, it can take days. The welded prototypes have the same strength as wrought steel and, with further development, could be of high enough quality to be used directly in manufacturing. As the components are built up layer by layer, metal oxides and impurities on the weld surface are melted and blasted away by the welding gun's shielding gas, giving sound components. Courtesy — LPS