Fairey Surveys
newsletter
OCTOBER 1974
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News of developments in the world of surveying and mapping

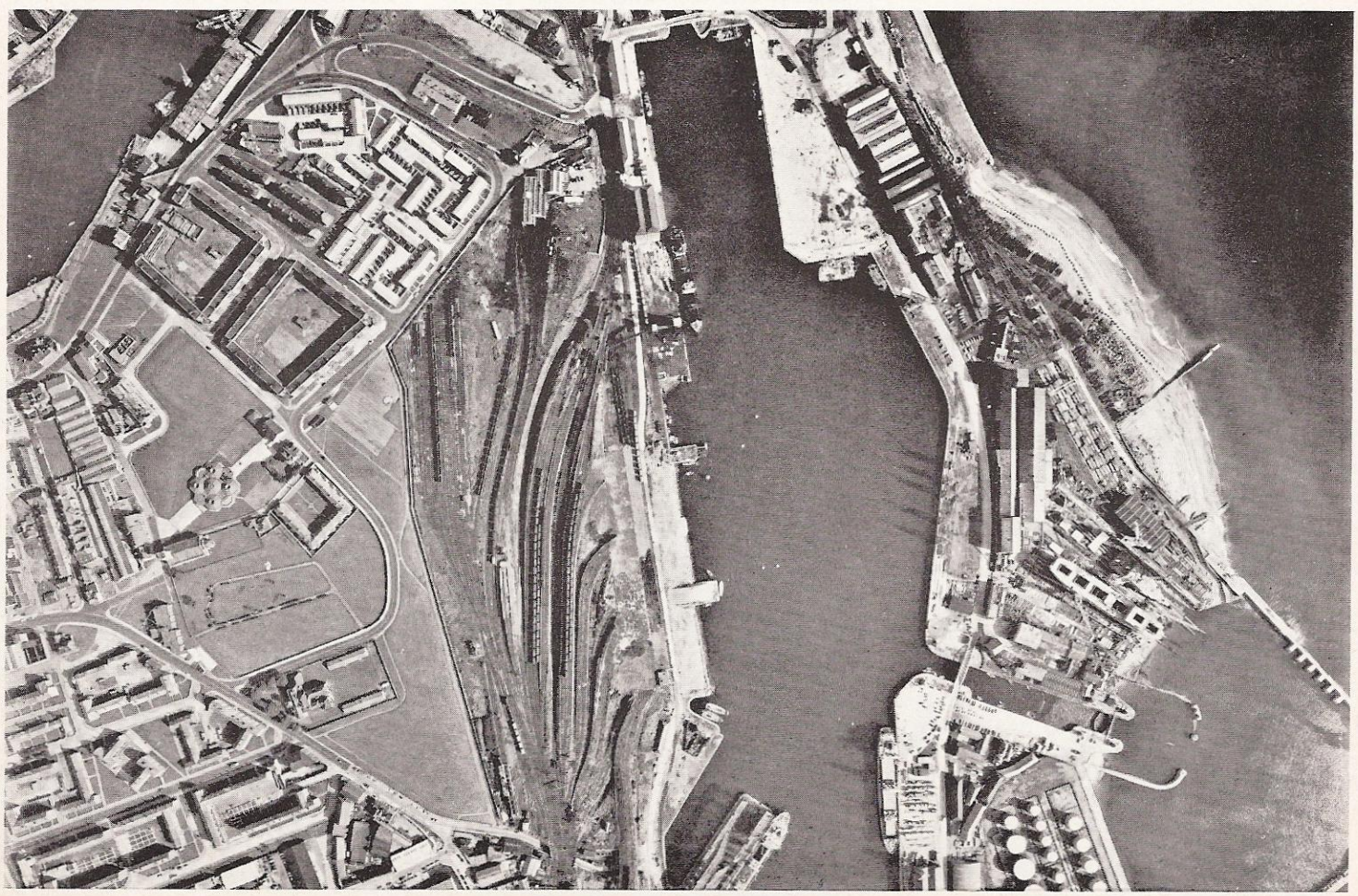
Tyne and Wear

One result of the reorganization of local Government in England and Wales, mentioned in our last Newsletter, was the formation of the new Tyne and Wear Metropolitan County. This embraces an area of 208 sq. miles of Tyneside and Wearside, important industrial areas of North-Eastern England with a population of around 1·2m and including such important urban areas as Newcastle and Sunderland. This area is one of the homes of British industry, based on the coal of the Northumberland and Durham coal field and the skills of its work people. The depression of the thirties is now left far behind and in the seventies we have a region of industrial progress, advanced technology and at the same time a very real concern for the environment and a determination that future development will not be at the expense of landscape and living conditions, as so often happened in the past.

The new Tyne and Wear Authority is adopting modern approaches to the processes of decision-making and, as a first stage, has commissioned aerial photography of the whole region at a scale of 1/5,000. They have chosen this scale, rather than 1/10,000, because of the urban and fast developing nature of the county. 1/5,000 scale is of course valuable to planners and can also be used for large scale engineering surveys. The coverage of the county at this scale makes possible an immediate start on the economic production of large scale maps for a variety of public and private projects, such as housing schemes, land reclamation, dockland development and new road alignments. In addition, environmental studies, such as land-use mapping, classification of housing types, waste disposal surveys, can all be implemented at low cost compared with conventional field surveys.

The completion of this contract within one month from date of order has an interesting technical sideline, in that being of large scale it was possible to fly on a number of occasions when photographic weather for higher altitude photography was unsuitable. Certainly to complete cover so quickly of 208 sq. miles of industrial countryside, with all the attendant problems of haze and smoke, reflects some credit on the air crew concerned.

Hudsons Dock North, Sunderland, showing the shipyard of Bartram & Son (an Austin & Pickersgill subsidiary) on the right. Photograph courtesy of Tyne and Wear County Council, Executive Director of Engineering, Mr. P. Morris, B. Sc., M.I.C.E.



Cairo and Remote-Sensing

A most interesting seminar on remote-sensing of earth resources and the environment was held during early October in Cairo under the aegis of the United Nations and FAO. A wide range of papers, from "Basic Considerations and Principles" to "Geologic Mapping of Sinai", was presented by some twenty visiting lecturers from U.S.A., Egypt, France, Italy, Brazil and England.

The available ERTS data naturally occupied much attention, but there was also a refreshing sense of inquiry into the practical applications of all forms of remote-sensing, whether carried out from satellites or from aircraft. Dr. Jerald Cook of the Michigan Environmental Research Institute gave three brilliant lectures on basic considerations and applications, which were models of clarity and exposition, whilst Professor Alouges told the seminar about French work with cameras carried aloft in balloons, and Dr. Bruno Ratti from Rome sparked off an interesting and wide-ranging discussion on the future of regional centres for the acquisition of satellite data. From what we could judge, the proliferation of ERTS' receiving stations, coupled with possible improvement to image resolution, could bring us face to face with some very real political problems in the very near future.

An invited paper by Walter Smith of Fairey Surveys recounted the results of some recent work, principally in Australia and Italy, and went on to suggest that the time had come when some form of contract was necessary between remote-sensing practitioner and user, defining the results and accuracies to be expected. Research must go on, but with the present high costs of instrumentation it was important that instruments and methods should be used because they were effective, rather than because it was fashionable to do so.

Dr. Howard of FAO read two very interesting papers on evaluation systems and on spectral reflectance characteristics, whilst Dr. Abdul Hady, Co-ordinator of the seminar, spoke on the very important use which had been made of ERTS imagery for mineral surveys in Egypt.

The conference lasted for eight working days and although the great volume of useful information which was presented must have sent some of the delegates (from more than thirty countries) home with a kind of intellectual indigestion, there can be little doubt that subsequent reflection on all that was said, coupled with perusal of the published papers, would most likely have led them to feel that these were days well spent.

THE EUROPEAN GROUP FOR ENVIRONMENTAL STUDIES

Fairey Surveys has recently accepted an invitation to become a member of this European Group, which includes one experienced company from each of the Netherlands, France, Switzerland, Germany and Italy and is dedicated to the encouragement of studies in the field of environmental planning and surveys, with particular reference to those based on remote-sensing from the air and from space. The group aims to optimise the practical value of work done by its members, particularly by making the experience in any one European country available to the solution of problems arising elsewhere.

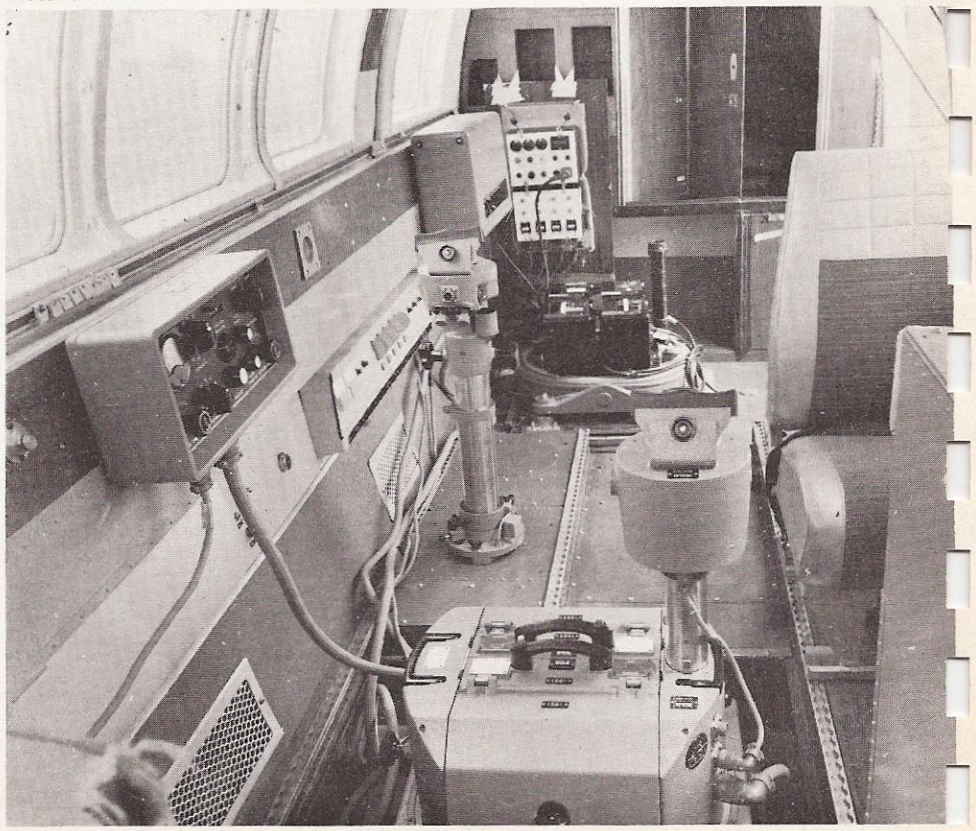
From the point of view of Fairey Surveys we have much to contribute, based on a growing volume of work in U.K. and overseas, and we now welcome the access to other European experience which this new group provides. Already we benefit from the experiences of Umwelt Data (Germany) in the field of temperature distribution mapping of the Rhein Main area and from recent Italian work on automatic image density classification as an aid to rapid interpretation. Systems such as the eleven channel multi-spectral scanning device are now available on a European scale. This type of sophisticated equipment would otherwise be prohibitively expensive for any one company to acquire and maintain and also for any one group of national users to support financially.

Twin-camera Photography

Beechcraft Queenair B80 with twin-camera installation.

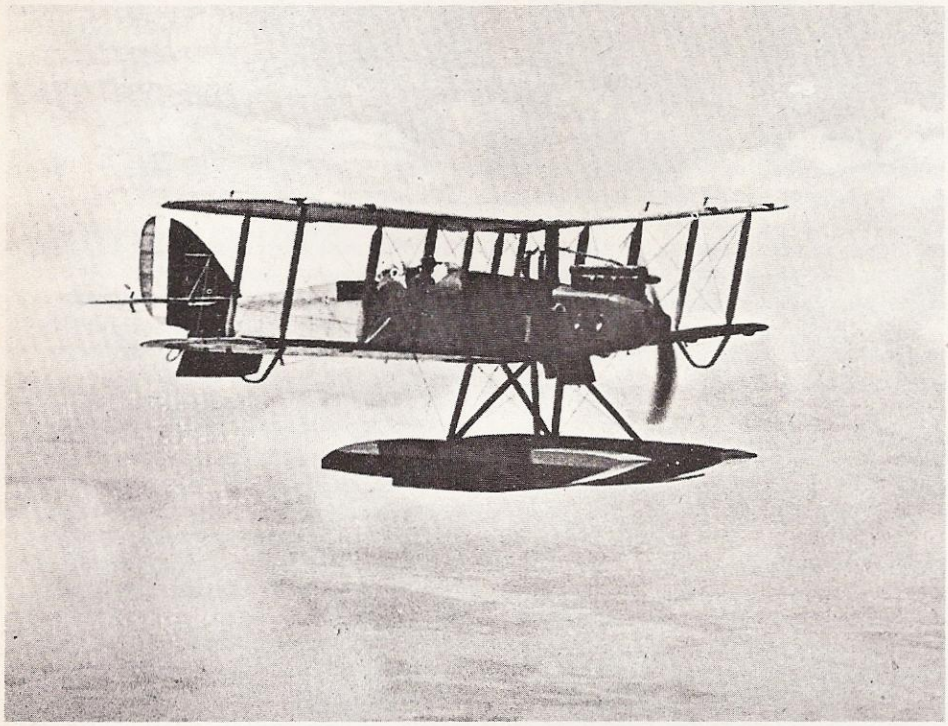
Queen Air B80 G-AZFS left U.K. for the Middle East on 1st October, rather earlier than usual, for urgent photographic contracts in several countries of the region. This aircraft's particular facility to carry two surveying cameras to altitudes of around 25,000 ft. and *to operate them simultaneously at this height* is particularly appreciated by the specialists concerned with remote-sensing of earth resources. Full-size stereoscopic colour-IR photography (reaching out to a maximum in the infra-red of 900 nanometres) combined with panchromatic black-and-white cover for normal use, provides a valuable and practical remote-sensing 'package' in many parts of the world.

Interior of Beechcraft Queenair B80 with Wild RC10 and multispectral camera installations.



From our archives, 50 years ago

The DH9 biplane, equipped with floats, which flew our first aerial survey over the Irrawaddy Delta, in Burma (see Newsletter 10).



MAPPING A NEW AIRPORT IN LIBYA

In July of this year we were able to put to good use our experience of survey work in Libya. This time the project was a combined air and ground survey of a new airport site near the Algerian border, twenty kilometres east of Ghadames.

The area to be mapped was a strip of desert ten kilometres by two kilometres, where shade temperatures reached nearly 50° centigrade.

The mapping was required extremely quickly – in fact maps of the central five kilometres of the strip were needed three weeks after the start of the work. To achieve this target, a team of ten ground surveyors was sent out, and a drawing office was set up inside their hotel to plot and draw the central portion of the survey for immediate delivery to the client.

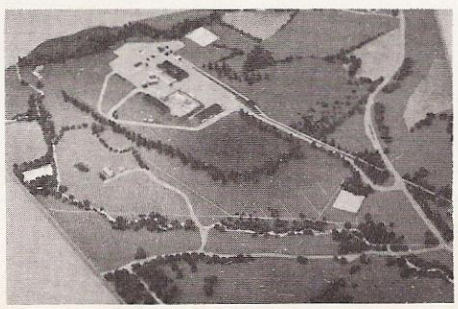
Photography of the whole area was taken at the beginning of the survey. Photo-control points were co-ordinated by the surveyors in the field, and maps of the end sections were produced photogrammetrically at the Maidenhead laboratories. These were tied in to the central section, and complete maps of the site at 1/2000 scale were delivered at the beginning of August, less than three weeks after the return of the survey team, and a week ahead of schedule.

BETWS COLLIERY MODEL

Betws Drift Mine, near Ammanford in Carmarthenshire, will be one of the show-pieces of the National Coal Board, when production starts in two years time. Not only will automation mean that production of the top-grade anthracite will be at more than twice the national average, but the site itself will be landscaped, and surface buildings kept low and to a minimum.

To demonstrate the site landscaping, which has already involved the levelling of two very old and very ugly spoil tips, the National Coal Board engaged Fairey Surveys to provide a model of the area. The model incorporates all the details of the engineers' plans, including the buildings, which were also made to scale. The complete model was painted, and detailed with trees, shrubs, etc., where the N.C.B. will be planting them as screens from nearby roads and villages.

The model is an exact, true-to-scale representation of the mine site and will be used to demonstrate how different a modern mine such as Betws Drift Mine can be and to expunge the mental pictures we all have of old-fashioned collieries.



NEW EQUIPMENT FOR HIGH PRECISION SURVEY UNIT

Previous issues of this Newsletter have carried reports of high precision surveys carried out by Fairey Surveys using the National Physical Laboratory's prototype Mekometer, the unique distance measuring instrument with an accuracy of 0.1mm in a range of 10m to 3km.

More recently, we have been able to hire the first production model of the instrument, manufactured by Kern of Switzerland, to evaluate it on such projects as the setting out of the centre line for the new Humber Bridge.

Demand for survey work of this accuracy is increasing so rapidly, that a Mekometer, together with ancillary equipment, is now being purchased to form the nucleus of a High Precision Survey Unit, so that we can offer to civil engineers and industry a measurement service using the most precise instrument available anywhere in the world.

The first customer for the Mekometer is Imperial College, who have taken the instrument over to the United States for three months to further their research on plate tectonics – the study of minute movements of large slabs of the earth's crust, which can cause earthquakes along the edges of each slab.

Not only can the new High Precision Survey Unit now guarantee very high accuracies on surveys of a conventional nature; it can also carry out the monitoring of such displacements in structures or terrain, and measure in those areas of industrial metrology where, due to physical constraints, the use of traditional methods, such as invar tapes and rods, is either inconvenient or very time consuming.

Mekometer in use on the Humber Bridge Survey.

Fairey Additive Viewer

In earlier editions of the Newsletter we have referred to the FAIREY ADDITIVE VIEWER, and we make no apology for drawing attention again to the existence of this very simple instrument which enables users, remote from main centres of computer processing, to make immediate use of ERTS imagery.

The viewer will accept up to four, 70mm positive transparencies, and allows the user to project and combine these images in any variety of colour or intensity which he wishes. This "mix and match" facility is simple in concept, but is an important aid in extracting maximum information from the several spectral bands of ERTS imagery.

The initial batch of viewers is sold and orders are now being taken for a second batch which is expected to be available in mid-1975, at a price of £2,750 excluding packing and delivery.

Another instrument developed and manufactured by Fairey Surveys to meet a market need is the FAIREY STEREO-VIEWER. This is a simple stereoscope, giving full view of 9 inch (21cm) prints and with all components separately purchaseable in case of need. At its present price of £40 it is designed for the engineers, photo-interpreters, schools and colleges, planners and all those wishing to make better use of aerial photography. It is incomparably easier to use than the typical pocket stereoscope and yet much cheaper than the more sophisticated types of desk stereoscope, with binocular attachments and other specialist refinements.

Sales have doubled in 1974 and the record single purchase to date is for thirty, for a teaching establishment. Delivery is from stock.

Dr. John L. van Genderen

We are pleased to announce the recent appointment of Dr. John van Genderen to our panel of consultants, where he will have particular responsibility for co-ordination of the company's environmental and resources studies.

Dr. van Genderen was born in 1944 in Utrecht, The Netherlands. Since mid 1969 he has been lecturer in the Department of Geography, University of Sheffield where he is engaged in teaching and research in the fields of remote sensing of natural resources and environmental analysis for management planning, and has acted as a consultant in these fields to several bodies such as the European Space Research Organization, national government departments, local authorities and several commercial firms.

After studying at University College, Townsville (Australia) and the University of Queensland in Brisbane, he obtained a B.A. (Hons.) degree in Geography. In 1966 he was awarded a Netherlands Government Postgraduate Fellowship to study at the International Institute for Aerial Survey and Earth Sciences (I.T.C.) in Delft, where he received a Diploma in Air Photo Interpretation. In 1969 he was the first person to obtain an M.Sc. degree in Air Photo Interpretation in Geomorphology from the I.T.C. Since mid 1969 he has been a staff member in the Department of Geography, University of Sheffield, where he obtained his Ph.D. degree.

Dr. van Genderen is a Principal Investigator to NASA for the SKYLAB–EREP programme being concerned with techniques of monitoring natural resources. He has attended many conferences on remote sensing, natural resource surveys, environmental pollution, etc., and has followed several post-doctoral courses on remote sensing of the environment, sponsored by the United Nations, the British Council and the Royal Society.

Numerous papers on methods of carrying out natural resource inventories, land-use mapping, and problems of environmental analysis have been published by him in academic and technical journals. Since its formation he has been a Council member of the Remote Sensing Society.

Dr. van Genderen will, in addition to advising client groups regarding environmental and resource studies, advise and co-ordinate the production of data and results within the production units of the Fairey Surveys Group.

NEWS IN BRIEF

* *Good wishes to our survey party destined for the Red Sea Hills area of Sudan in November. They form part of a joint operation with Hunting Surveys Limited, working on a British Aid financed project. Communications in the area are sparse and the team of six surveyors will have three helicopters at their disposal.*

* *Some excellent false colour infra-red photography was achieved recently over the Longannet Power Station as part of an environmental pollution study. Two years ago a preliminary study was made to assess the extent of any possible pollution. The evidence from one isolated set of photographs was not conclusive. The new imagery, taken at the same time of year as previously, will be used for a comparison study, to interpret any changes in the normal natural pollution pattern, and to identify the probable causes.*

* *Survey Services (Australia) Limited has now been formed as a joint venture of Maunsell and Partners Pty. Limited, and Survey Services (Hong Kong) Limited. Mr. Walter Smith, Managing Director of Fairey Surveys, has been appointed to the Board of Directors. The new company is already operational in Brisbane, Queensland.*

* *Peter Sharman, Chief Ground Photographer, has just returned from a four month tour of duty with the Air Survey Department of the Ministry of Petroleum and Mineral Resources in Saudi Arabia. He has been co-operating with technicians of this rapidly developing organisation, in the preparation of photo-mosaics for the planning of a forestry planting programme in the Asir region based on photography taken by Fairey Surveys' Queenair B80 aircraft earlier this year. His tour marks another stage in the progress of our collaboration with this Saudi Arabian department, for whom we have carried out both instructional and contract work in the past. The programme continues, with Robert Purcell, Mosaic Room Supervisor, following on the production and training in Saudi Arabia.*

* *Up to nine surveyors at a time have been engaged on North Sea operations this summer, some since last June. Work has been for the development of offshore coal and oil fields, and has involved positioning pipe laying barges, test bores, and buoys from the oil rigs.*

If you require further information on items featured in Fairey Surveys Newsletter or would like to be added to the Mailing List for future issues, please contact:

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