RSRS NEWSLETTER

No. 101 September 1969

THE DIRECTOR'S NEW APPOINTMENT

Staff will be glad to know that the Director has been elected Chairman of the I.E.E. Electronics Division. He will deliver his inaugural address to the members on 15th October, the subject being 'Radio and Weather'.

KEW OBSERVATORY - A BI-CENTENARY NOTE

Part II

Superintendent Jeffrey retired in 1876 and was succeeded by Mr. G. M. Whipple, a son-in-law of Beckley. From now on part of the duties of the Observatory became more and more concerned with the establishment of standards of measurement. A thermometer had been obtained from Regnault against which comparisons could be made, and barometers and thermometers, watches and navigational instruments were calibrated at the Observatory,as were a number of gravity measuring pendulums to be taken on expeditions. The Observatory was fast becoming the standards laboratory of the country; apparatus which passed the test being marked with a K.O. monogram and test certificates issued denoting the standards reached by the device. By now regular sunspot photographs at Kew had ceased, the duties having been taken over by the Greenwich Observatory, but an increased number of magnetic observations were being made. In 1893 Whipple retired and his position was taken over by Dr. Charles Chree who became well known for his work in geomagnestism. Meantime the work of verification of watches, thermometers, etc. continued at an ever increasing pace and by 1900 the test fees for that year amounted to £2,500.

This type of test house work was increasing rapidly and by the last years of the nineteenth century it had become obvious that what was really needed in this country was a national laboratory for the preservation of standards of physical science, and for research. In 1900 the National Physical Laboratory was inaugurated, the Kew Observatory being a nucleus and continuing, to some extent, in its role of test house for certain things, including clinical therometers. This state of affairs continued for twelve years, but by 1910 the Observatory was being administered by the Meteorological Office under whose control it now is. First class geomagnetic observations became increasingly difficult after the establishment of electrified railway systems and in 1908 the majority of this work was shifted to the Eskdalemuir Observatory in Dumfries while seismographs initially installed there, were shortly afterwards moved to Kew to make it for many years the only first class seismograph station in the country.

During the more than quarter of a century of Dr. Chree's superintendence, the Observatory was relieved of the tasks of verification, which had grown out of all proportion and in 1910-1925 was concerned once more with meteorological and geophysical matters. In 1925 links with the past were revived with the Superintendency of Dr. F. J. W. Whipple, a grandson of Beckley and son of the former Superintendent, who revived interest in Ronald's old subject, atmospheric electricity, and from 1925-1939 Whipple and a team of men under his leadership produced a very considerable programme of research into matters such as point discharge currents, potential gradient variations and the conduction of electricity in the atmosphere. Also among his interests were propagation of sound in the upper atmosphere and its relation to atmospheric structure and work on atmospheric pollution. Sounding devices for determining the distribution of charge in thunder clouds were developed in the 1930's at Kew and flown with considerable excitement and not a little risk.

This period saw also the gradual evolution of the British radio sonde, designed first at the National Physical Laboratory and later taken to Kew for tests and modifications, where eventually was developed a full scale calibration plant. Calibration continued there till 1946 when it was taken over by the main instrument branch of the Meteorological Office. Dr. Whipple, the younger, retired just before the second World War, his place was briefly taken by Dr. J. M. Stagg, who had, however, shortly to leave for service duties. Throughout the war the Acting Superintendent was Sir George Simpson, a veteran meteorologist who had been Director of the Meteorological Office and a meteorologist with Scott's expedition. Simpson too was greatly interested in atmospheric electricity and continued many of the observations which Whipple had been carrying out, as well as instituting some of his own.

In the twenty years or more that have followed the end of the second World War increasing emphasis has been placed at Kew on such problems as fog formation

and airfield visibility, and increased precision in solar radiation measurement, particularly as an aid to energy balance studies. This is, in a way, a continuation and improvement of records of sunshine which have been going on since the 1870's and continuous records of solar radiation since the 1930's. So much of the radiation programme became the central note of the work at Kew, in addition to the normal routine meteorological measurements, that the problem of scaling and analysis of the data finally required introduction of modern data handling methods in which the output was registered in the form of punched paper tape for subsequent analysis by digital computer. The staff at the Observatory played a pioneer role in the introduction of these techniques. As the National Radiation Centre the Observatory is now very much concerned with calibration and data handling from other British stations at home and abroad and is represented on suitable World Meteorological Organisational Working Groups.

During the setting up of the Meteorological Office's High Atmosphere Branch, the initial feasibility studies of measuring ozone with artificial earth satellites and by means of sounding rockets, together with the experimental techniques required for observation, data storage and telemetry, were first of all investigated at Kew prior to the launching of the first rocket to try out the system. The Upper Atmosphere Branch then moved to the Meteorological Office Headquarters at Bracknell.

In recent years the work of Kew has perhaps been that of steady maintenance of observations and improved techniques, indeed only recently the old north wall screen and recording thermometers of Beckley were replaced after a century of use, by more suitable modern equipment and observations of the phenomena of the atmosphere continue with the most accurate modern and reliable machinery that is available to the meteorologist.

The building itself is not so much changed from that new building of Chambers two hundred years ago. Two extra storeys were added to the east and west wing about 1890, but otherwise things look much as they did. The telescope dome is still there, though the telescope, along with much other apparatus, was dispersed in 1840. Some of the apparatus, now in the Science Museum, forms the George III collection - the telescope is in Armagh Observatory; the heliograph also in the Science Museum, together with some examples of Ronald's recording thermometers. Inside, the elegant octagonal rooms with the glass fronted bookcases or display cabinets still remain. The surroundings of the Observatory, now the Mid-Surrey Golf Course, have perhaps some lingering trace of formal informality suggestive of the eighteenth century; quite probably some of the older trees remain from that time.

The building itself has acquired fragments of history. The eighteenth century curator who was hanged for murder; the carpenter, one of his victims,

whose body was found lying in the main octagon room; the monks in their long vanished priory; the Victorian scientific worthies, who had occasion to visit the Observatory; the founder, poor sick George, who in happier days would spend much time working quietly away at a lathe when he was not making astronomical observations; Kew has known them all.

These characters come to mind, particularly to the observer alone on duty on a misty November night, trudging through that octagon room, out to where the ruins of the priory once stood, then back to the top of the building into the telescope dome, where once royalty watched the stars. In spite of all, however, the place is friendly and accommodating and if at present it does seem to be a little in the evening of its years, with just a steady 'bread and butter' programme to accomplish, remember that things probably looked so in the 1780's, in the 1840's, in 1870, when the money nearly ran out, and probably at a host of other unrecorded crises in a long career. Perhaps, indeed, the glory of the house is now departed ..... perhaps.

G. Gardiner

Station News

Station Open Days, which are to take place during the week beginning Oct.20th, are to be arranged as follows.

Tuesday	Oct.	21st	Press
Wednesday	"	22nd	Director's guests and Senior Staff
Thursday	"	23rd	Visitors (by invitation only)
Friday	"	24th	
Saturday	"	25th	Staff and friends
Monday	"	27th	Visitors from SRC establishments.

The Director will attend the meeting of C.C.I.R. Study Groups in Geneva from September 17th to October 1st. The Assistant Director, also, will attend the meetings of C.C.I.R. Study Groups IV and VI from 20th September to 3rd October.

Staff News

Congratulations to:

Doug. and Joan Bampton on the birth of their son John Leslie.

Mrs. Marjorie Richards and Mr. Leslie Shepherd who were married at Slough on 30th August.

Welcome to:

S. Cherry	S.O. (Perm)
Miss R. A. Ford	S.A. (Perm)
R. F. Hemmings	Ex. O.
Mrs. A. J. Slater	A.E.O. (Perm)
Mrs. I. Jack	Casual Worker
Miss M. J. Day	Vacation Worker
W. D. J. Morgan	Skilled Labourer
H. C. Bryant	Labourer

Resignations

H. S. Meswani	A.E.O. (Perm)
A. M. Davies	A.E.O. (Perm)
Poh Loh Ooi	E.O. (Non-perm)
J. E. Newbury	S.A. (Perm)
Mrs. K. C. Reed	A.E.O. (Non-perm)
P. J. Brain	S.A. (Perm)
P. J. Gregory	Vacation Worker
R. Maskell	Vacation Worker
W. R. Hare	Vacation Worker
R. Harrison	Sandwich Course Student
K. Fraser	S.A. (Perm)
John Smith	E.O. (Perm)
P. R. Kermode	A.E.O. (Perm)
M. A. Pender	A.E.O. (Perm)
T. Yonezawa	PRF
G. Mollett	C. A. (Part-Time)
W. Davis	Messenger
Mrs. M. F. Jennett	Cleaner
E. E. Freeman, Jnr.	Labourer

Other Changes

F. E. Evans	H.E.O. (Perm) Transfer to RGO

SPORTS AND SOCIAL CLUB NEWS

Bar Tournament

Prizes will be presented to the winners of the above competition in the Bar at 12.45 p.m. on Friday, 10th October.

Home Brewers Club

It has been suggested that the Sports and Social Club form a section for those members who make wine or brew beer at home. (I have been quoted a price of 2/- a bottle for wine - at this price one could drink wine with every meal). The chief benefit of such a club would be the discount (up to 25%) available from bulk buying of materials. If people interested would contact Keith Burrows (Hut 19) a date for a meeting could then be arranged.

Veronica Lovell

CAMERA CLUB

The annual outing took place on August 1st, when 9 members of the club spent a very interesting afternoon exploring the B.E.A. Engineering Base at Heathrow. As the base is reputed to cover one million square feet and we had only 3 hours there, a great deal had to be missed out, however we were lucky enough to be able to look over a Vanguard that was in for minor repairs and were suitably impressed with the array of dials and switches in the cockpit. Other brief stops were made at the Stores, a vast complex of vital aircraft equipment; the upholstery store, which looked remarkably like a jumbo jet mockup; the workshops; the engine testbeds; and the various maintenance hangers where several aircraft were either being completely overhauled or being converted from passenger to freight configuration.

Our thanks to Dr. Rishbeth for arranging this very enjoyable afternoon's visit.

BONFIRE

Wanted: A band of helpers to collect combustible materials from the park for the usual Nov. 5th celebrations. Would those willing to spend a few lunch-times helping please contact Martin Lawton, Room 121.

Letter to the Outstations

Dear Colleagues,

Mankind's subjection, however temporary, of the natural state of things has become more than usually evident here. Night's dread empire, chaos, has received a check; the tendency toward disorder has been interrupted; work is being done upon us. All this is a long-winded way of saying that Open Days are looming and now cast shadows before in the shape of a general clean-up.

Our laboratories, well, some of 'em, have had an orderly beauty imposed upon them. There is much putting-in-place, removal of inessentials, and washing - all faintly suggestive of mortality and the embalmer's art. There is, however, also the hope that all this but precedes the revelation, in transcendent beauty, of the efforts of years of research. The grubby graph and dubious correlation shall return transfigured, truth shall be proclaimed and shall reign - for a few days.

One side effect of this sort-out is the emergence of faint far-off half forgotten things; mystic boxes with potentiometers and the odd meter all wired in circuits now unknown, or at any rate disowned and disremembered by their perpetrators. A fragment was unearthed which, being interpreted, turned out to be a primitive request form for outside purchases. It had all the simplicity and beauty of a polished stone-age axehead. You wrote what you required, where you hoped to get it and for how much. The remainder of this protoform was blank space in which, presumably, the suppliant was expected to compose a plausible plea to the financial gods of the time.

In this scrap of paper is there really a reminder of a golden age? Had we but to give 'because it is there' as our reason for purchase? Let us cherish the sweet illusion, for that such it must be is evident even to the guileless mind of,

Yours sincerely,

The Editor

Reprint List-September 1969

F. Horner and R. B. Bent — Measurement of terrestrial radio noise.

Proc. Royal Soc. 1969 A 311 527-542

R. B. Bent — Determination of the attitude of the Ariel III satellite

Proc. Royal Soc. 1969 A 311 543-553

D. E. Smith — Theoretical considerations in the determination of the attitude of Ariel III by optical means.

Proc. Royal Soc. 1969 A 311 555-562

H. Rishbeth, R. J. Moffett and G. J. Bailey — Continuity of air motion in the mid-latitude thermosphere

J.A.T.P. 1969 31 1035-1047

W. R. Piggott — The acquisition and use of ionospheric data for prediction and other practical applications.

I.T.U. Telecommunications Journal 1969 36 273-279

The subjects listed below are contributions to the book 'Atmospheric Emission' by B. M. McCormack and A. Omholt; published by Van Nostrand and Reinhardt.

G. M. Courtier, D. A. Bryant, A. D. Johnston — Modulation of Auroral Electrons near the Equatorial Plane p.213-219

L. Thomas — Ionospheric phenomena related to Airglow p.423-435

Internal Memoranda

Nil