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The New Royal Greenwich Observatory at Herstmonceux

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Steady progress is being made with the removal to Herstmonceux in the English county of Sussex, of the Royal Greenwich Observatory. H. M. King George VI has been pleased to give his assent to this new name, which is a reminder of the long association of the Observatory with the site in the royal park at Greenwich, near London, given by its founder, King Charles II in 1675.

Approaching the stately Herstmonceux Castle, with its beautiful 15th century rose-pink brickwork, there is little at present to remind the visitor that a large observatory is in process of transference to the site. But within the Castle much work has been done to adapt it to the needs of Britain's oldest scientific institution. The interior, entirely modernized within recent years, lends itself well to the purpose of the Observatory. The Great Hall is being converted into the Observatory Library, a reinforced concrete floor will carry the great weight of books, and along one side a gallery has been built to provide additional shelving space; it will make a magnificent library, with ample accommodation for future additions. Some of the large rooms, such as the Long Gallery, which served as a Ball Room, have been subdivided for convenience. The Chapel has been turned into a Conference Room; collo-



HERSTMONCEUX CASTLE, HAILSHAM, SUSSEX, ENGLAND

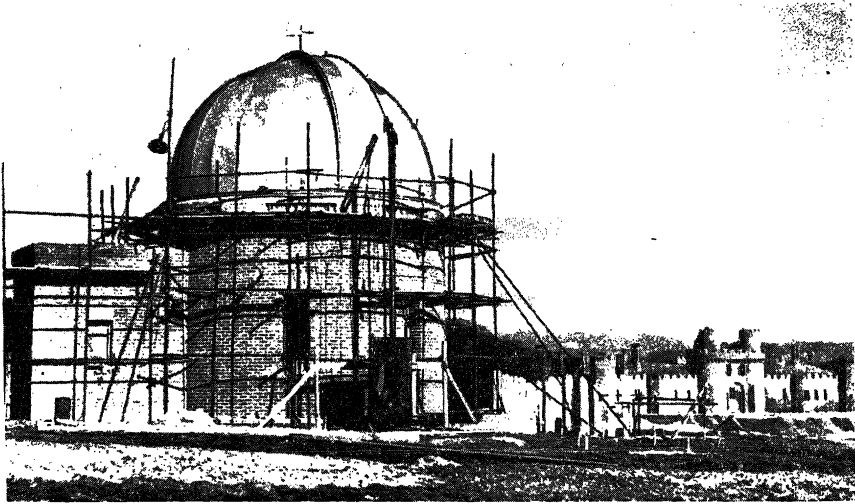
quia will be held in it at regular intervals, which will help to keep the staff in closer touch with new work and developments in astronomy.

A portion of the Castle has been adapted as a self-contained residence for the Astronomer Royal; the rest of it provides office accommodation for the Astronomer Royal, two Chief Assistants, the Secretariat, the Solar Department, the Department of Astrometry and Astrophysics, the Meridian Department, the Magnetic and Meteorological Department, the Chronometer Department, with optical laboratories, photographic laboratory, dark rooms, and the storage of records and photographic plates.

To the south of the Castle there are several temporary buildings which were erected during World War II. These huts will eventually be dismantled. At present they house the Nautical Almanac Office, which was evacuated on the outbreak of war; a full range of punch-card equipment, and a chronometer and watch repair workshop. Others are used for the temporary storage of dismantled instrumental equipment from Greenwich, and of photographic records and publications as well as for the hostel accommodation of single staff and as recreation rooms.

SOLAR BUILDING

At present the only new building erected is the solar building, which contains the photoheliograph, two spectrohelioscopes, and underground tunnels for the solar spectrograph and spectroheliograph. The average definition of the solar photographs obtained at Herstmonceux is far superior to that obtained at Greenwich. Not only is there more clear sky and a more transparent atmosphere at Herstmonceux, but also the atmosphere is much more steady. The Solar Department, the Chronometer Department, and the Magnetic and Meteorological Department, in addition to the Nautical Almanac Office, are already installed.



SOLAR BUILDING NEAR HERSTMONCEUX CASTLE

Much detailed planning of the new buildings for housing the telescopes has been in progress. The detailed requirements for each building have been specified, so that the architect has all the information needed for the preparation of design. The telescopes will be divided into groups. To the north-west of the Castle, on top of a ridge from which the ground slopes gently away to north and south, will be installed a group of meridian instruments. It will include the Cooke reversible transit circle from Greenwich, the Melbourne reversible transit circle, which will be used primarily for differential work, the photographic zenith tube (now under construction, but nearing completion), and a Bamberg broken transit instrument. A new pavilion will be erected to house the Cooke transit circle; the pavilion in which it is now housed at Greenwich will then be dismantled and re-erected at Herstmonceux to house the Melbourne transit circle. The site for the meridian group will be free from refraction anomalies and permit the installation of meridian marks both north and south of the instruments. The Airy transit circle, which defines the prime meridian of longitude, is still in use at Greenwich; a century of observations will have been completed with it by the end of 1950. It will remain at Greenwich in position on the prime meridian as an historic instrument with other old instruments, dating from Halley's time.

MODERNIZING EQUIPMENT

The main group of equatorial instruments will be placed on an extensive level site on the top of the higher ground to the east of the Castle. This group will contain three refracting and three reflecting telescopes. The 26-inch photographic refractor and the 28-inch visual refractor, whose domes were badly damaged during World War II, have already been dismantled at Greenwich. The opportunity is being taken of modernizing equipment while it is dismantled. The dome for the 26-inch refractor will be provided with a rising floor. The 13-inch astrographic refractor is still in place at Greenwich and has been in use for experiments on methods of photo-electric guiding.

The 30-inch reflector was mounted at Greenwich on the same mounting as the 26-inch refractor, to which it served as a counter-poise. The arrangement was inconvenient, because both telescopes could not be in use at the same time. The 30-inch reflector will be provided with a separate mounting and dome; the mirror, which was slightly astigmatic, has been refigured by Mr. F. J. Hargreaves. The 36-inch reflector will not be dismantled until near the time for its re-erection at Herstmonceux. The third reflector will be a new instrument, a Schmidt telescope of approximately 23-25 inches aperture, provided with an objective prism. The three reflectors will be interconnected to form a single long building with laboratories, dark rooms, plate standardizing room, aluminizing room, plate storage rooms, and offices, the 36-inch reflector being in the center. The 30-inch and 36-inch reflectors will be mounted at the same level, so that they can see into each other; it

will be possible to feed either of them from the other with a nearly parallel full-aperture beam for calibration work. A raised roof between them will allow full-aperture screens to be erected if desired and will give considerable freedom for a wide range of tests and operations.

ISAAC NEWTON REFLECTOR

The Isaac Newton reflector will stand by itself to the south of the main equatorial group and will be the last instrument to be installed. The optical design has been settled and the 98-inch glass disk, the gift of the Trustees of the McGregor Fund of Detroit, is now at the works of Sir Howard Grubb, Parsons and Co., Newcastle-on-Tyne in the north of England, where the rough grinding has been begun. The mirror will be given a spherical figure, with a radius of curvature of approximately 588 inches. A Schmidt correcting plate, with clear aperture of 85 inches, will be provided for direct photography and for nebular spectroscopy at the prime focus. Aspherical Gregorian secondary mirrors will be used for spectrographic observations at the Cassegrain and Coudé foci, the correcting plate being dismounted for these observations. A Board of Management, of which I, as Astronomer Royal, am Chairman, is dealing with the design of the instrument. Committees of the Board are considering the details of servo-controls and photo-electric methods of guiding, of spectrograph design, and of the mechanical design.

A large building is projected to house the Nautical Almanac Office and the Time Department. Early in World War II the Time Department was removed from Greenwich to Abinger, in the English county of Surrey, where the Magnetic Observatory is situated; the main section has remained there while a subsidiary section was brought into operation at Greenwich after the end of the war. The whole of the quartz clock equipment, all the ancillary electronic equipment, the various aeri-als for the reception of foreign time signals, and the electronic laboratories will be moved to Herstmonceux. The longitude of Abinger is known with great accuracy from the several years of simultaneous time determinations at Greenwich and Abinger. Before all equipment is finally removed from Greenwich, it will be necessary to determine the longitude of Herstmonceux with high accuracy; simultaneous observations at Herstmonceux, Abinger, and Greenwich will be used for this purpose. The time distributed from Herstmonceux will continue, of course, to be Greenwich Mean Time, the appropriate correction for the longitude of Herstmonceux (about $0^{\circ} 21' \text{ E}$) being made.

An essential requirement for any observatory is a good work shop. The building planned for this will also serve as the chronometer and watch repair shop.

The target date which has been set for the completion of the move is the end of 1953, but the Isaac Newton Telescope is unlikely to be completed and ready for use before 1955 or 1956. The transitional period, during which staff and equipment are divided between Herst-