

H. J. Elwertowski, C.B.E., Dip. Ing. (Warsaw)
—An Appreciation



Henry Elwertowski, lately Head of Admiralty Compass Observatory, has retired. Joining A.C.O. in 1958 as Chief Scientist, he took over from Captain T. D. Ross, R.N., the last Naval Director, in 1971. His tenure of office has been marked by continued technical progress at the Observatory and by an increase in its national and international esteem in the field of navigation science.

H. J. Elwertowski was born at Dabrowa, Poland. After his education at Warsaw University, graduating in mechanical engineering, he joined the Polish Optical Co., and became chief designer of fire control equipment.

When the German invasion of Poland was imminent, he joined the Artillery of the Polish Army and was engaged in the fight against the Germans between 1938 and the end of September 1939, when he was captured and interned in Hungary. Escaping from internment, he made his way to France *via* Yugoslavia and Italy and enrolled in the Polish Army formed in Paris. However, the occupation of France by the advancing Germans forced the disbandment of the exiled Polish Army and Elwertowski again escaped and made his way by cycle and on foot to the unoccupied south. Here he was marooned until December 1941, enduring further privation and working in the meantime as a stoker in hotels and at salt extraction from the sea. Eventually he was able to cross the Pyrenees to Saragossa in Spain and continue with a series of illegal journeys by train and ship to Gibraltar *via* Madrid and Lisbon. At Gibraltar he took passage by troopship to Britain, landing at Greenock early in 1942.

Elwertowski's Admiralty career began in 1942 at the Admiralty Research Laboratory, Teddington as a temporary S.E.O. His duties there were concerned with the design of fire control equipment for Army A.A. guns. In

1948 he was promoted to S.S.O. and in 1949 to P.S.O. A noteworthy achievement with Teddington group, which had become Admiralty Gunnery Establishment was the design of a ball resolver, basic unit of an anti-aircraft flight predictor.

When AGE moved to Portland in 1954, Mr. Elwertowski became leader of the Stabilisation Group. In 1955 he was promoted to S.P.S.O. One of his major responsibilities at Portland was the vertical stabiliser incorporating the then novel American flotation gyro units.

When AGE was dissolved in 1958, Elwertowski succeeded Dr. W. F. Rawlinson as Chief Scientist at A.C.O. Shortly afterwards, following decisions by the Government's Barclay Nihill Committee, the Establishment was reconstituted a Directorate under the then DGW, Admiral Le Fanu.

At A.C.O., one of Mr. Elwertowski's first major tasks was the re-organisation of the team developing Ships' Inertial Navigation Systems, a project which has made and continues to make steady progress. From the early experimental 4-gimbal SINS, lessons learned in H.M. Ships *Steady*, *Dreadnought*, *Eagle* and *Valiant* led to the very successful Mk. I system, which embodied gas bearing gyros and a navigational monitoring computer. Elwertowski, in his capacity as a mechanical engineer, was personally involved in the design of both gyros and computer. The successful visit of H.M.S. *Dreadnought* to the North Pole was made with the assistance of SINS, Mk. I and this system is installed in H.M. Ships *Warspite* and *Fife* and extensive further submarine and surface ship fittings are planned. An experimental Mk. 2 3-gimballed SINS, using microcircuits and digital computation, has had sea trials in H.M.S. *Penelope* and a laboratory prototype is being constructed.

In 1962 following the Nassau agreement with the U.S.A. on Polaris submarines, a Polaris Navigation Mission to America was led by Capt. Ross and Mr. Elwertowski. Two of the many improvements recommended by the mission, and subsequently adopted, were the reduction of American Polaris SINS systems from three to two per boat and the elimination of type 11 periscopes. These changes saved Britain over £2m. per vessel. A.C.O.'s Polaris work later became specialised in developing accurate heading transfer systems, the best of which has been adopted for British bases and has been successfully demonstrated at Cape Kennedy.

In magnetics, Mr. Elwertowski not only fostered the continuing improvement of various types of compasses used by the three Services, but built up extensive collaboration with other organisations, particularly with D.A. (Nav) [Mintech] on *NIMROD* aircraft Magnetic Anomaly Detection, with R.A.E. Farnborough on *Sonobuoy* and with the assessment and advice services offered on aircraft compasses and compass base sites to the R.A.F., B.E.A., B.O.A.C. and others. It is characteristic that Elwertowski found time personally to carry out a magnetic survey, for the R.A.F. at Singapore, after mastering details of the procedure.

In gyro compass matters, Mr. Elwertowski's era at A.C.O. has seen the phasing out of older types of instrument, the bridging of gaps in the Service by American units and the inception and launching of the new all-British Compass Stabiliser project.

As a result of Elwertowski's negotiations with the American firm of Nortronics, the world's most sensitive gyro test station, known as Ultra Precision Test Equipment was installed at A.C.O. U.P.T.E. is now used to assess not only high performance gas bearing gyro units used in SINS, but many others including laser gyros. The important but less publicised SINS accelerometer used in conjunction with these gyros was designed and is constructed at A.C.O.

A decision by Mr. Elwertowski to develop self-acting gas bearings for SINS gyros in place of ball bearings, to prolong gyro life, led to a perhaps more important improvement in system accuracy. In this pioneer activity a very close liaison has been built up, both with British gas bearing organisations and with American groups under the sponsorship of the U.S. Office of Naval Research. An annual information-sharing Anglo-American gas bearing conference was inaugurated by Elwertowski as well as domestic meetings of the British Gas Bearing Panel, which he founded.

Under Mr. Elwertowski at A.C.O. some important new responsibilities were assumed by the Establishment. The post-design of weapon stabilisers and the design of new ones incorporating gas bearing gyros were among new tasks as well as the design and development of a new Ship's Acceleration Computer.

After a visit to U.S.A. to study American practice in the field of ring lasers. Mr. Elwertowski took over responsibility from SERL

Baldock for ring laser gyros. This has led to a major contract with EMI and a test programme of EMI and A.C.O. instruments.

Henry Elwertowski's progress at A.C.O. in addition to the technical advances made, has been marked by a number of important milestones. A.C.O.'s golden jubilee in 1967 saw the opening of a new laboratory block by Sir Horace Law, Controller of the Navy. Personal promotion followed in 1968 when he became a DCSO. In 1970 a new R & D workshop was opened. In 1971, when the last naval director retired and A.C.O. became the Navigation Department of ASWE, Mr. Elwertowski became A.C.O.'s first "Head".

Official recognition of his services came with the award of a C.B.E. in the 1972 Birthday Honours.

Two farewell ceremonies marked Henry's departure. At the first, primarily domestic, A.C.O.'s senior Naval Officer, Commander A. E. Fanning paid tribute to Henry's qualities and his achievements over his 14 years at A.C.O. On behalf of local staff he presented a gold watch, an armorial plaque and a photograph of the Establishment. In a brief reply, Mr. Elwertowski expressed the great pleasure derived from his task at A.C.O. and his appreciation of the happy team-work of all groups there.

At an evening party attended by VIP guests as well as A.C.O. staff and their wives, Mr. H. W. Pout, Director of ASWE, spoke of Henry's achievements in building up A.C.O. to its current level of activity and handing over to ASWE such a thriving concern. Mr. Pout presented a cheque as the gift of ASWE and other headquarters staffs. Again expressing his thanks, Mr. Elwertowski said he was confident that even greater times were in store for A.C.O. A final touch was a presentation of a bouquet to Mrs. Elwertowska by Henry's Secretary Mrs. Dorothy Brown.

Not least remembered of Henry's characteristics will be his sense of humour and fund of anecdotes in lighter vein, whether true or apocryphal.

Although the departure of Henry Elwertowski from A.C.O. is a severe loss, many who value its activities recognise with appreciation that he left the place greater than he found it. In wishing him and Mrs. Elwertowska all the best for the future, those that remain and many others who know him will surmise that he is looking for fresh fields to conquer.