

factory manner; but at present there is still too wide a divergence of opinion to render a definite proposal generally acceptable. In order to evade the difficulty at present preventing the association from having funds of its own, the committee of the association, at a meeting held last year, at which nearly all the academies were represented, passed a unanimous resolution recommending that the different academies should declare themselves ready to accept legacies or gifts to be held in trust by them for the purposes of the association. When this resolution came up for discussion at the present meeting, objections were raised by several delegates, and the matter had to be referred to the several academies for an authoritative expression of opinion. Doubts were expressed in several quarters whether it would be advisable for the association to be in possession of funds, and at any rate one delegate thought that it would be more powerful if satisfied with its present "moral" force. Time, further reflection, and the force of circumstances will no doubt lead to a generally acceptable solution.

By the admission of the Société helvétique des Sciences naturelles, which was decided upon almost unanimously, the association has established the important, and, I believe, wise, principle that it attaches greater importance to the representation of countries in which important work is being done and of societies which take a leading part in such work than to the more or less exclusive tests of membership which a society may adopt. The Swiss society is not an academy in the old and perhaps proper sense. It may be the poorer for having no mediæval traditions, but it is the richer for not having adopted, without such traditions, a mediæval organisation.

Our association now consists of twenty-one societies, and fears have been expressed that our work would become more difficult if the number were to be increased substantially. These fears are not, perhaps, groundless, if the addition of a new society does not mean the inclusion of new interests and of independent directions of activity. Now, if we look at the proper balance of representation of such independent scientific activity, it seems altogether anomalous that the British Empire should only be represented by the Royal Society and the British Academy. The non-representation of India more especially denotes a gap which should be filled without delay. Both on the literary and on the scientific side our work has dealt with matters in which India is directly concerned. The publication of the "Mahābhārata," more especially, cannot be carried out without substantial help from India, and at the present meeting in Rome it was announced that several of the Indian native rulers have subscribed to the undertaking. In the Asiatic Society of Bengal, India possesses a society of full academic rank, and without it the International Association of Academies is not complete. Some formal changes in its organisation, the dropping of the word "Bengal" from its title (I understand that its inclusion was purely accidental and not originally intended), and an increased activity on the scientific side may be desirable, but even with its present organisation there is no reasonable doubt that a proposal coming from the Royal Society to add the Asiatic Society to the list of academies forming the union would be generally welcomed.

In his introductory speech, Prof. Blaserna made a feeling reference to the death of King Edward, and several of the festivities prepared in honour of the meeting were modified in consequence of the Court mourning. A state dinner which the King had intended to give was changed into a private reception of the delegates, and in place of a garden-party arranged for by Queen Margherita, the Queen enter-

tained the delegates informally one afternoon at her palace. Soirées were given by the Syndics of the City of Rome in the Museo Capitolino, by Prince Teano and by Countess Lovatelli, but these were, as a matter of course, not attended by the British delegates. An interesting excursion by motor-car to Ostia, including a visit to the important excavations which are being carried out in that locality, concluded the meeting. ARTHUR SCHUSTER.

HALLEY'S OBSERVATIONS ON HALLEY'S COMET, 1682.

IN the record-room at the Royal Observatory, Greenwich, are preserved nineteen manuscripts of Edmund Halley. In one of these, Halley's original observations of the comet afterwards called by his name were recently discovered by Messrs. Davidson and Burkett. The book is of about octavo size; it appears to have been originally a college notebook. On the cover Halley has written "Edmund Halley his Booke and he douth often in it Looke." Part of the book contains neatly written notes (in English) on geometrical conics, with carefully drawn figures, chiefly written on alternate pages. The observations (in Latin) and calculations have been jotted down subsequently wherever there is room, and in many cases have been written over the original contents of the book. By a strange coincidence (it can, I think, be no more than a coincidence) the observations, now identified as those of Halley's comet, are interspersed among notes on the parabola.

It will be recalled that Halley's researches which led to his discovery of the periodicity of this comet were not made until about twenty years after its appearance of 1682; in fact, the law of gravitation was not published until 1686. It is, however, well known that Halley saw the comet, but I believe that details have hitherto been lacking.

The observations now identified are given below in full, with practically no changes, except that punctuation has been added. In the original, symbols are used for the days of the week and the signs of the zodiac. The observations, which must have been made with the naked eye, are almost entirely alignments with stars; they are, of course, too rough to have any scientific value now, but are of historic interest. Calculations to determine the R.A. of the comet from these observations are intermingled with them. Although the observations can hardly be correct to 15', six-figure logarithms are used in the calculations! Halley, however, did not use his own observations in his determination of the orbit of the comet. The references to the "hand," "foot," "knee," "pastoral staff," &c., of Boötes are of some interest as illustrating the early method of specifying stars, based on the Almagest.

The year is not given, but as the observations are certainly those of Halley's comet, and the days of the week agree, we may supply the date, 1682.

Saturday, August 26, 7h. 29'. Culminante 277° A.R., Cometa visus in linea recta cum Arcturo et capite Ophiuchi; et ex altera parte cum Corde Caroli et secunda caudæ Ursæ Majoris; vel linea recta a cometa ad 1^{am} caudæ Ursæ Majoris relinquebat in consequentia stellam dictam Cor Caroli 30' A.R.

Tuesday, August 29, 7h. 15'. Cometa in linea recta cum Arcturo et medium inter duas precedentes Coronæ, item in altera linea per Cor Caroli quæ relinquebat in consequ. stellam in radice caudæ Ursæ Majoris 30'; item in altera per genu præced. Bootis et medium inter contiguas dorsi; item in altera per genu sequens et med. inter 3^{am} et 4^{am} Serpentis. Ascent. Recta Cometæ 198° circiter.

Wednesday, August 30. Culminante 280° A.R., visus est Cometa in linea recta quæ transiens genu præced.

Bootis relinquebat 15' ad ortum [?orientem] stellam humeri præced. Bootis; altera recta ducta per Cometam et genu sequens Bootis transivit medio loco inter 2^{am} et 3^{am} Herculis; et parum forsam 20 minuta reliquerat rectam per Arcturum et 8^{am}. . . .

Thursday, August 31. Cometa in linea recta cum crure præced. Bootis et cubito sinistræ manus. Hinc nubes Horizonti vicinæ Cometam exceperet.

September 4. Cælo undique sereno, culminante 286° A.R., Cometa visus est in linea per Arcturum quæ transivit inter duas claras in Humeris Ursæ Minoris propius vero minori quam majori 1/3 intervalli; item altera recta per genu præced. Bootis reliquit in antecedentiam 1^{am} caudæ Ursæ Majoris 1° 00' circiter; altera recta per genu sequens Bootis quasi strinxit præcedentem Coronæ vel reliquit forsam 15' ad orientem; altera per caput Ophiuchi reliquit lucidem colli Serpentis 15' ad clustrum; denique linea ducta per Lancem Boream transivit medio loco inter duas sequentes in Trapezio Sagittarii.

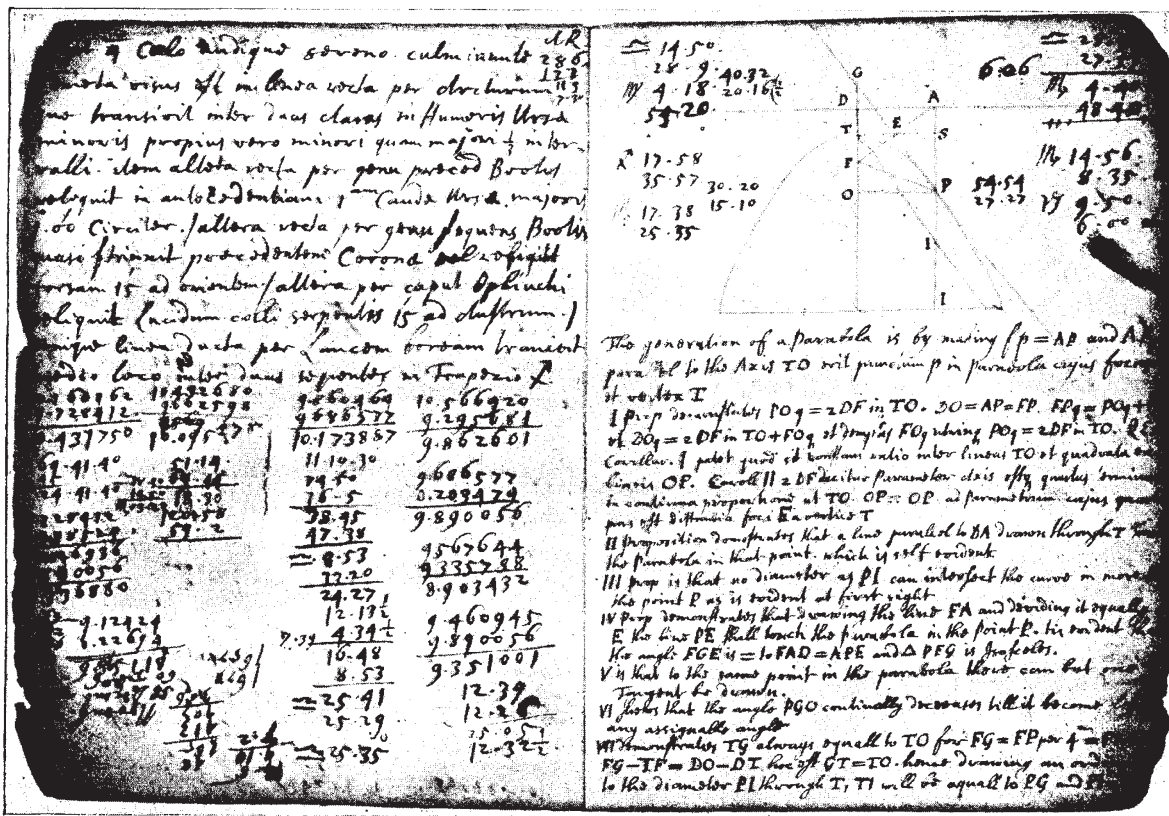
September 8. Jam statim occasurus, Cometa videbatur

observations. No record is made of an observation on September 10; but in Flamsteed's "Historiæ Cælestis" there is a note that it was seen through a gap in the clouds by Dr. Halley on this date, but could not be referred to stars, after which, on account of its nearness to the sun and increasing south declination, it was not seen again.

A. S. EDDINGTON,
(For the Astronomer Royal).

SOME NEW ORNITHOLOGICAL WORKS.¹

(1) "THE Home-life of a Golden Eagle" is a valuable contribution to the history and psychology of birds. It reminds one of the daily entries in the hospital ward-schedule of an interesting maternity case, by the medical officer in charge, to whom, unseen, have been revealed instincts of



Halley's original observations of his comet in 1682. The observations of September 4, 1682, with their reductions, occupy the left-hand page: the right-hand page contains notes on the parabola.

in linea recta ducta per Lancem Boream et medium cap. Sagittarii; itemque in altera per Arcturum, quæ reliquit in consequentiam præcedentem in manu Bootis 50' circiter; videbatur estimatione Libra 20° 40'.

September 9. Eadem hora visus Cometa in linea recta per Lancem Boream quæ transivit grad. unum infra dextrum genu Ophiuchi; itemque in altera per crus sequens Bootis, quæ transivit medio loco inter superiorem colobori et caput Bootis; item linea ducta per Arcturum medio erat loco inter præced. manus Bootis et ult. caudæ Ursæ Majoris.

A page is torn out at the beginning of the book which may have contained observations prior to August 26. There is a note in Halley's handwriting on the inside of the cover, "August 16, primum visus ad initium Leonis," which evidently refers to this comet, but need not necessarily refer to his own

mother and child which would never be displayed during the ordinary visitation. Mr. Macpherson is to be heartily congratulated on the completeness of his record, and on the dogged perseverance with which

1 (1) "The Home-life of a Golden Eagle." Photographed and Described by H. B. Macpherson. Pp. 45+32 mounted plates. (London: Witherby and Co., 1909.)
(2) Bulletin of the British Ornithologists' Club. Edited by W. R. Ogilvie-Grant. Vol. xxiv., Report on the Immigrants of Summer Residents in the Spring of 1908; also Notes on the Migratory Movements and Records received from Lighthouses and Light-vessels during the Autumn of 1907. By the Committee appointed by the British Ornithologists' Club. (London: Witherby and Co., 1909.)
(3) "Catalogue of Canadian Birds." By John Macoun and James M. Macoun. Pp. viii+761+xviii. (Ottawa: Government Printing Bureau, 1909.)
(4) "The Birds of the Leeward Islands, Caribbean Sea." By C. B. Cory. (Chicago: Field Museum of Natural History, 1909.)
(5) "Birds of Illinois and Wisconsin." By C. B. Cory. (Chicago: Field Museum of Natural History, 1909.)