fisheries. The book deals fully with the men of the North Sea, and is embellished with colour and pencil drawings and photographs.—Mr. William Lewis, of Duke Street, Cardiff, is publishing for the Cardiff Naturalists' Society the first volume of "The Flora of Glamorgan," including the spermaphytes and vascular cryptogams, with index. The work has been prepared under the direction of a committee of the Cardiff Naturalists' Society, and is edited by Prof. A. H. Trow.

OUR ASTRONOMICAL COLUMN.

BROOKS'S COMET, 1911c.—In addition to the ordinary cometary spectrum, M. Bosler finds radiations at λλ 407, 405, 401, and 399 in the spectrum of the head of Brooks's comet. A longer exposure on September 25 showed also the tail radiations, and it was seen that λλ 401, 425, and 456 extended some 1° 30′ into the tail, while the radiation at λ 470 extended for not more than 30′.

Prof. Iniguez, describing the photographs secured at the Madrid Observatory (*Comptes rendus*, No. 17, October 23), records seven condensations in the spectrum, viz. λλ 555, 514, 472, 440, 423, 410, and 388. But the fourth and sixth are multiple, the wave-lengths of their components being 440, 434 and 432 and 410, 407, 405, 404, and 402 respectively; λ 388 is double.

The comet is still visible near the horizon, south of east, just before daybreak; but, as will be seen from the following ephemeris, by Dr. Ebell, the southern declination is increasing, and the comet, receding from both sun and earth, is becoming fainter:—

Ephemeris 12h. M.T. Berlin.

1911	α (true) h. m.	δ (true) ° ′	log r	log Δ	mag.
Nov. 8 ...	12 43·9 ...	− 9 48·9 ...	9·7531 ...	0·0263 ...	3·9
,, 12 ...	12 51·6 ...	− 14 10·4 ...	9·7918 ...	0·0558 ...	4·2
,, 16 ...	13 0·3 ...	− 18 3·6 ...	9·8317 ...	0·0824 ...	4·5
,, 20 ...	13 9·4 ...	− 21 31·7 ...	9·8709 ...	0·1063 ...	4·9

BORRELLY'S COMET, 1911e, AND WOLF'S COMET, 1911a.—A telegram from Dr. Meyermann to the *Astronomische Nachrichten* announces that Borrelly's comet was observed at Tsingtau on October 20. It was elongated, about 2′ in diameter, magnitude 10, had no tail, and was very indistinct.

M. Kamensky gives an ephemeris, extending to January 2, 1912, for Wolf's comet in No. 4528 of the *Astronomische Nachrichten*. Only four observations of this faint object during the present return have yet been recorded; these give corrections of the order of −0·5s. and −6″ to the ephemeris. Taking the magnitude on June 29·5 as 14·6, as determined from Dr. Wolf's plate, M. Kamensky finds that at no time this year will the comet be brighter than the fourteenth magnitude.

MARS.—M. Antoniadi's observations of Mars with the large refractor at the Meudon Observatory commenced on September 18, and a number of changes have already been noted. Modifications of the colours of various parts of the disc, with an abnormal pallor of the "seas," suggests the presence of yellowish cloud in the Martian atmosphere, such as has been noted at previous oppositions. A large mass of white cloud completely veiled the region of M. Cimmerium, M. Tyrrhenum, and Hesperia on October 14. The complete veiling of so dark an area as M. Tyrrhenum has not been seen since 1888, when the series of observations commenced. The whiteness of Libya on October 11 is attributed to overlying mist, which is transparent when viewed normally, but increases in visibility as the line of vision becomes more oblique, *i.e.* as the area approaches the terminator. A very bright terminator projection, probably due to cloud, was a very prominent feature of the regions north of Icaria from 10h. 56m. to 11h. 25m. on October 14; terrestrial clouds then stopped observations (*Astronomische Nachrichten*, No. 4532).

THE SUN'S ENERGY SPECTRUM AND TEMPERATURE.—In No. 3, vol. xxxiv., of *The Astrophysical Journal* Mr. Abbott discusses the distribution of energy in the sun's spectrum as derived from the spectro-bolometric observations made at Mount Wilson, Mount Whitney, and Washington during 1903–10. He discusses at length the various possible errors and the conditions which might modify, more or less, the derived results. The distribution of energy outside the atmosphere is tabulated, and the energy is shown to reach a sharp maximum at about 0·470 μ; a table of atmospheric transmission coefficients is also given. The results appear to be independent of the observing station, but sensitive to the character of the spectroscope used, and little weight must be given to values for wave-lengths beyond 0·40 μ where glass prisms are employed; a quartz-magnalium system was used latterly.

Mr. Abbott also discusses the question of the sun's temperature, and finds that the sun's effective emission is comparable with that of a "black body" at 6000° C. absolute, although he considers this is modified considerably, and that the actual radiating temperature is more of the order of 7000° C. absolute.

A DAYLIGHT METEOR IN SOUTH AFRICA.—Some accounts of a wonderful meteor, which provided a striking spectacle some time before noon on August 24, are recorded by Mr. Innes in Circular 11 of the Transvaal Observatory. The phenomenon was seen by several persons located near Potchefstroom; but the reports are not strictly in accordance. Mr. Innes suggests the possibility of the several observers having seen portions of a broken-up meteor of such brilliancy as to arrest their attention in full sunlight. Mr. Ingham, chief engineer of the Rand Water Board, estimates that when he saw it the meteor was not more than 400 yards distant, had a head 5 or 6 inches in diameter, and a flame, like that of burning sodium, extending some 12 to 15 feet from the head. No "find" is recorded.

THE PERIOD AND EPOCH OF 68 *u* HERCULIS.—In No. 4526 of the *Astronomische Nachrichten* Dr. Hertzsprung discusses the long series of observations of the variations of 68 *u* Herculis made by J. F. J. Schmidt during 1869–79. He finds for the period 2·051027d., which agrees with the spectroscopic results, and for the commencing epoch of chief minimum, taking the mean of Schmidt's and recent observations, J.D. 2410102·321 M.T. Greenwich. The period shows no apparent variation.

THE ASTRONOMICAL SOCIETY OF BARCELONA.—One of the objects of this society, upon which special stress was laid at its foundation in January, 1910, was the provision of a public observatory where members might meet on fine evenings to study celestial phenomena and to discuss points of astronomical interest. It is pleasant to record that the primary object of the promoters has been realised very unexpectedly, and without cost to the society, in such a manner that within the next few weeks the members will be in absolute possession of a well-equipped observatory. Señor Rafael Patxot y Jubert has offered to present his observatory and instruments to the society, and, needless to say, the offer has been accepted. This establishment, the Observatori Catalá, is situated at San Feliu de Guixols, in the province of Gerona, and in importance stands next to the observatories of Madrid and San Fernando. The whole establishment will be removed immediately to Barcelona, where it will be re-erected on the roof of one of the public buildings.

The instruments include a double equatorial by Mailhat, visual and photographic, with apertures of 8¾ inches and focal lengths of 10 feet and 7 feet 9 inches respectively. A complete set of accessories of precision is included in the gift—spectroscope, micrometer, camera, electric pendulum, and azimuthal theodolite. Annexed to the observatory in its new position will be a room for meetings of the society, library, photographic laboratory, &c. Preparations for the public lunar exhibition, which will be held in Barcelona in May, 1912, are being pushed forward rapidly, and already many promises of assistance have been received from all parts of the world. The exhibition will be held in the University buildings, under the honorary presidency of the rector, Baron de Bonet. The executive council of the society invites the cooperation of seleno-

graphers of all classes in order to make this exhibition, the first of its kind, a success. All communications should be addressed to Señor Don Salvador Raurich, Calle Gran Via Diagonal, 462, 2°, Barcelona, Spain.

THE MAGNITUDES OF EIGHTY-EIGHT STARS IN COMA BERENICES.—In No. 43 (vol. iv., 7) of the *Mitteilungen der Nikolai-Hauptsternwarte zu Pulkowa* Herr Beljawsky gives the resulting magnitudes obtained from the measures of two plates exposed in March last on the Coma Berenices group. The magnitudes were determined by comparison with stars of the Pleiades group, taken on the same plates between exposures on the Coma Berenices group. Comparing his final magnitudes with those obtained by Pickering, M. Beljawsky finds that there is a distinct connection between the difference Beljawsky-Pickering and the spectral class of the stars concerned; the difference increases from class A (0·38) to class K (0·84), and the increase is probably due to a difference in the scale of photographic magnitudes.

THE NEW BOTANICAL LABORATORIES OF THE UNIVERSITY OF MANCHESTER.

THE new botanical laboratories of the University of Manchester were opened by Dr. D. H. Scott, F.R.S., on Friday last, November 3. The new block of buildings consists of four main floors with two mezzanines, and is planned so as to give adequate accommodation for the various branches of botanical science.

For palæobotany, the study of which is so closely associated with the name of the late Prof. Williamson, the first professor of botany of the Owens College, a room is set apart on the ground floor, close to the entrance on the south side of the building; while on the north is a well-lighted laboratory for thirty junior students, connected directly with the larger elementary laboratory in the main building, which is capable of seating forty more students. On the first floor is a large research laboratory, opening into the senior laboratory.

The second floor is devoted entirely to the Cryptogamic Department, which owes its endowment to the munificent legacy of the late Prof. Barker. In addition to providing facilities for researches of a purely scientific nature, the Barker Laboratory will be available for inquiries connected with agriculture, such as investigations into diseases of plants caused by fungi and bacteria.

On the third floor the laboratory for plant physiology occupies the gable end of the building, being designed so as to possess both north light for microscope work and south and west light for experiments requiring direct sunlight. Such experiments can be made either in the laboratory itself or in the greenhouses, which occupy the whole extent of the south front of the top floor. The greenhouses are divided so as to have both a hot and moist and also a cooler and drier portion.

The new botanical block is entirely devoted to laboratory accommodation, and does not contain any lecture-rooms or museum galleries. The facilities for botanical work in the University are added to by the experimental grounds and greenhouses on the Behrens Estate, Fallowfield, which supply both the need of economic botany and zoology. Here experiments in plant breeding have been in progress for some time past, as well as investigations on conditions of cultivation as affecting the development or prevention of certain plant diseases, and the testing of varieties of cultivated plants supposed to be immune to disease.

Photo.] New Botanical Laboratories, University of Manchester. [*E. Vincent Ward.*

At the opening ceremony on Friday, November 3, the Vice-Chancellor (Sir Alfred Hopkinson) welcomed the guests, and after referring to the need there had been for securing adequate accommodation for the teaching of botany in the University, and the steps taken by the council of the University to meet the requirements of the growing department, invited Dr. Scott to open the new building. A ceremonial key was presented to Dr. Scott by the architect, Mr. Paul Waterhouse, and, after the door had been unlocked, the building was declared open, and was inspected by the visitors.

Later in the afternoon Dr. Scott delivered a short address to the friends and students of the University, and spoke