lens is better than is assumed by various astronomers; I found it about ten times greater than it is given, for instance, by Prof. Wilsing in his recently-published paper in *Astr. Nachr.*, No. 3400.

The weak point in photographing stars and nebulæ is not in the instrument; it is in the plate. We know that the Pleiades are surrounded by wide-spread nebulosities, shown by Prof. Barnard and myself. Now for four years I have been working at a chart of this nebulous region, but it has been impossible to get to an end till now. In this case the plates did not allow it; either they were not sensitive enough, so that I got nothing, or if they were, they had streams or spots looking exactly like nebulæ. I made several dozens of exposures of the Pleiades, some of twelve hours' exposure, containing beautiful nebulosities, but no plate has been sufficient. All of them show, besides the true nebulosities, more or less artificial nebulæ, making it impossible to find out exactly the structure of the true nebulosities. Thus we need often a large number of plates to get the true nebulosities ready for charting. This is now the chief question for celestial photography.

Photographs of small nebulæ taken with portrait lenses often show much detail; for instance, the nebulæ near γ Cassiopeiæ, called by Barnard the "fan-shaped" nebulæ. These nebulæ were photographed the first time

FIG. 5.—Fan-shaped nebula in Cassiopeia.

by myself, December 30, 1893, and described in the *Astr. Nachr.*, No. 3214. Prof. Barnard obtained them several weeks later, and he showed that these nebulæ represent a good example for the advantages of portrait lenses over reflectors in discovering nebulæ, because Dr. Roberts did not find them on his plates. Now these nebulæ seem to me of the greatest importance for the comprehension of the genesis of stars; and especially for the theories of Mr. Lockyer, these will be found very interesting objects. Several years ago I gave in *Astr. Nachr.*, No. 3217, an illustration of one of those nebulæ [$0^h\ 52^m + 60°\ 5'$ (1860)], and the sketch is reprinted here (Fig. 5). I have shown that the nebula looks like a tornado, in the concentrated part of which the stars are formed, and that thus the chain formed by the stars may be understood.

There we have the point where our small portrait lenses fail, and where the reflector finds its place. The lens has found the nebula, and given the first idea of its constitution; but the large mirror will bring out here the details necessary for our knowledge. It is the same as with the small spiral nebulæ, of which Dr. Roberts' plates have shown us the true form.

To me it is quite incomprehensible how it was possible to begin a dispute about the use of the portrait lens in celestial photography. The portrait lens has given us so much, that it is now too late to discuss its efficiency.

The doublet finds the nebulæ—I will not speak of comets, planets, &c.—and throws light upon the ways in which the large nebulous streams spread over enormous parts of the sky. The charting and following of these streams forms now one of the most important problems of astronomy. Therefore this instrument is absolutely necessary for us. It brings us also to a certain high degree of knowledge of the finer detail, though not nearly so high as the mirror. But with portrait lenses not too large we can expose very long, and over several nights, so that we can get traces of nebulæ and stars, which we can never find with the large reflector, because such very long exposures are not quite possible with a reflector, for technical reasons.

For these points the reflector has to recede. It is true the portrait lens will often photograph certain objects as nebulous, which will be found later formed by smallest stars. But the pictures of the reflector show, likewise, at many places nebulosities which, I am sure, are composed of relatively bright stars. An example of this effect has been given by Prof. Barnard, for the case of Dr. Roberts' plates (*Monthly Notices*, lvii. No. 1). The difference between the two instruments in this direction is not a very great one, and because the portrait lens is absolutely necessary to us in so many problems shown here, we have to use it as often as we can for these purposes, and to leave the reflector to work out the finest details of special points. MAX WOLF.

Heidelberg, Astrophys. Observatory, March 1897.

THE TWENTY-FIFTH ANNIVERSARY OF THE FOUNDATION OF THE NAPLES ZOOLOGICAL STATION.

ON April 14 was celebrated, with great ceremony and *éclat*, the twenty-fifth anniversary of the foundation of the Zoological Station at Naples by Dr. Anton Dohrn. To the general outside public, the eventful day itself was heralded by the appearance in the Bay, just opposite the Zoological Station, of the entire fleet of the Station, drawn up in line, and gaily decked with bunting. This consisted of the two steamers, the *Johannes Müller* and the *Frank Balfour*, and five small fishing-boats. In addition, the Italian Government sent a guard of honour in the shape of a second-class cruiser, the *Fieramosca*, which remained in attendance all day.

In the Station itself all was excitement and expectancy. In the morning, a deputation consisting of one German one Italian, and one Englishman, who were supposed to represent the naturalists of each nationality at present working at the Station, waited on Dr. Dohrn, and offered appropriate congratulations, each speaking in the language of his nation. Dr. Dohrn, on replying, successfully evaded linguistic difficulties by beginning his speech in German, continuing it in Italian, and finishing it in English. The same deputation also waited upon and congratulated Dr. Hugo Eisig, Dr. Dohrn's senior assistant, who has been associated with him since the foundation of the Station.

The grand ceremony itself began at two o'clock. The visitors, on arrival, first assembled in the library, and then passed on to the meeting-room, which was situated on the ground floor of the smaller building. This was the largest room available, and it held about one hundred and twenty people. Needless to say, every available seat was occupied. At one end of the room was a small platform and desk, from which the various speakers in turn delivered their discourses. Just above the desk was hung a specially-painted picture, representing the Bay of Naples, and in the foreground a symbolical figure resting against a block of stone, on which was inscribed, "Al Prof. Dohrn ed ai suoi cooperatori," and the fact of the twenty-fifth anniversary. On a shelf running round the end of the room were arranged the various addresses

and telegrams received by Dr. Dohrn. Amongst others, I noticed addresses coming from Munich, Frankfort, St. Petersburg, Moscow, Danzig, Turin, the Société Helvetiques, and the Society of Naturalists in Naples. England was represented by a beautifully-illuminated address from the Royal Society, and also by addresses from the Marine Biological Association, Plymouth, the Cambridge Philosophical Society, and the Board of Biology and Geology at Cambridge.

The speeches themselves, though very interesting, were somewhat lengthy withal. As the audience consisted mostly of Germans and Italians, the speeches were arranged so as to be spoken more or less alternately in either language. The proceedings were opened by Prof. Todaro, of Rome, who referred at some length to Spallanzani, who had engaged in marine biological work on these very shores. He was followed by Prof. His, who gave some account of the history of the Station since its foundation. He also read an address signed by nearly two thousand naturalists, from almost every country in Europe. The next to speak was Prof. Waldeyer, of Berlin, who brought an address from the Berlin Academy, and who mentioned the fact that he was the first student to work at the Station, at a time when the resources and equipment were very different from those of the present day. He also dilated on the manifold uses, in many departments of science, to which a Marine Zoological Station can be put. Next came the Syndic of Naples, who presented Dr. Dohrn with the freedom of the city; and then Admiral Palumbo, the Under-Secretary of State, made a short speech. The Minister of Public Instruction, who followed, presented Dr. Dohrn with an order, the "Grand ufficiale della corona d'Italia," and brought the congratulations of King Humbert.

Thus far the proceedings had been very stiff and formal, and even solemn in their nature, so the German Ambassador from Rome endeavoured to instil a little humour into his speech. In this there was frequent reference to the Kaiser, who sent his best wishes, and mentioned his interest in science. The Ambassador remarked, also, that Italy and Germany, closely connected by political ties, had an additional bond of friendship in the Stazione Zoologica.

Then came the speech of the day, from Dr. Dohrn himself. This was, of course, spoken in German, but copies of it, printed in Italian, were circulated amongst the Italian members of the audience. This admirable and highly-interesting speech was of somewhat more than half-an-hour's duration. Dr. Dohrn said that he had himself intended to make this day merely an occasion for recalling the memories of persons connected with the Station, and also the scope of the Institute; but his friends had desired to celebrate it with more ceremony, and for this he begged them to accept his most profound gratitude. He referred in very feeling terms to his father, but for whose liberality it would have been impossible to bring his enterprise to a successful issue. Biologists, he remarked, continually speak of protoplasm, the basis of all things living, the substratum of all animal and vegetable life. But there is in man, also, a psychical protoplasm. It was this psychical protoplasm in which was originated the first idea of the Stazione Zoologica, and this he owed to his father. Next to his native forests in Pomerania, the strongest passion of his father was for Italy, with its ancient culture, with the splendour of its renaissance, and its ancient music.

Dr. Dohrn then offered his grateful thanks to the people of Naples for allowing him to found his Station there, his especial thanks being due to the late Profs. Paolo Panceri and Salvatore Trinchese, of the Naples University. It was owing to Panceri's influence with the municipal authorities and the Government that a site for the Station was obtained in the *villa nazionale*. His thanks were no less due to the Italian Government for their moral and material assistance. Fortunately, also, the Station was able to rely upon the tower of strength expressed in the words "Kaiser und Reich." Thus the Emperor William I. presented a considerable gift to the Station; whilst in the early days of its foundation, the time of difficulties, not a year passed but that the unfortunate Emperor Frederick wished to be informed as to its progress. Similarly, also, had the Kaiser William II. shown his sympathies. Also, King Victor Emanuel and King Humbert have extended their protection to the station.

Great, also, are the thanks due to the Imperial Government and the German Parliament. In accordance with an ancient custom, which comes from England, the mother of Parliamentary *régime*, proposals regarding demands on the exchequer may be initiated by the Government. On the strength of a petition signed by Helmholtz, Virchow and Dubois-Reymond, the German Parliament granted a large annual subsidy, which they gradually increased to 2000*l*. a year.

No less was his gratitude due to his English friends, for their help in the grave crisis which attended the Station at its origin. It will be to the lasting glory of the Station that it was largely subscribed to by Darwin. How great, also, were his (Dr. Dohrn's) thanks to his father for his liberality, and likewise to his father-in-law, who allowed him to use his wife's *dot*, which had been destined for furnishing their house, to pay debts on the Station. But the Station was always provided with everything necessary for research, and this appealed much more to his wife's heart than the furnishing of her own house.

It was impossible to thank every one to whom thanks were due, but to three corporations—the Academy of Sciences of Berlin, the British Association for the Advancement of Science, and the Smithsonian Institution of Washington—the prosperity of the Station was largely due, for their subsidising "tables" at the Station.

Finally, in the name of the Stazione Zoologica, were especial personal thanks due to his collaborators, particularly to Dr. Hugo Eisig, the first collaborator with him at the Station, and one who threw in his lot with him when the actual foundation of the Station was yet but a chance. And lastly, to all those who by their presence had set a sanction on these festivities, Dr. Dohrn wished to offer his most profound thanks for the great honour they had done him.

This brought the meeting to a close. In the evening the guests and members of the staff of the Zoological Station were entertained by Dr. Dohrn at dinner, at which in all some sixty people sat down. The speeches were again many in number, but were shorter and more humorous in nature. H. M. VERNON.

EDWARD DRINKER COPE.

THE death of Prof. Cope, of Philadelphia, which took place on April 12, has removed the man who, since Louis Agassiz, has been the greatest influence in American biology.

Born in Philadelphia on July 28, 1840, he passed from the University of Pennsylvania to Heidelberg, where he took the degree of Ph.D. in 1864. In that year he was appointed Professor of Natural Science in Haverford College in his native city, but resigned the post three years later, partly by reason of ill-health. During the years 1871 to 1873 he joined many geological exploring expeditions to Kansas, Wyoming and Colorado, and from 1873 to 1878 he was engaged in field-work with the Wheeler Survey of the United States Government. Th Hayden Survey also had his services as vertebrate palæontologist. The results of his work in connection with these Surveys were published by the Government in many fine volumes—*e.g.* "The Vertebrata of the