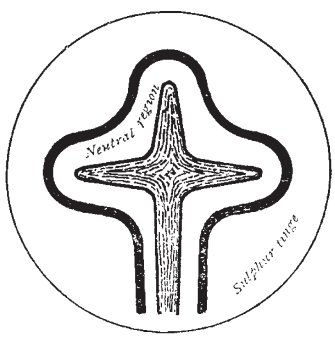
figures; and from subsequent experiments it would seem that the resin serves the purpose *almost* as well as ebonite as far as clearness of definition is concerned. A metal plate, which may or may not be insulated, formed a base for the resin. I mention these details since the ebonite rods and plate are not so well within every one's reach, on the score of greater expense and the necessity of having them specially constructed for the experiments. A plate machine of some size (18-inch plate) seems necessary, as I find that, unless the Leyden jar is charged to rather high potential, no shadow is formed, and, further, that the sharp definition of the shadows increases with the charge of the jar. The screen used was a design, cut out in cardboard and tinfoil pasted over it, very similar in shape to that given in Fig. 2 in Prof. Thompson's paper, and the shadows obtained were substantially similar to that in Fig. 3. But here a small point not before recorded came out:—If the pin, from whose point the discharge is made to take place, be slanted in any direction, which is easily done with the sealing-wax holder by simply heating, the shadow of the object then lengthens out curiously, just as do the shadows formed by an object intercepting light rays as the obliquity of incidence is increased.

The new feature, however, which appeared from my experiments, and which is not recorded by Prof. Thompson, although very likely the experiment may have been done before, is as follows:—Instead of starting with the resin plate in a neutral condition, I gave it a rather strong negative charge by rubbing it vigorously with a fox's brush and discharging the Leyden jar as before on to the pin, using precisely the same object to cast the shadow as before. Its character now, however, was completely altered, appearing as I have endeavoured to represent it in the figure. A simple cross, having little resemblance as to outline



with the object, was the result. The red-lead of course was picked out by the negatively-charged resin under the object and piled up to form the cross, which was much more strongly red, as one would expect, than the former shadow. There was also a rather wide neutral region around the cross, considerably more than in the former experiments. It seems to me that this effect is something more than the attenuation of the shadow spoken of by Prof. Thompson, where the screen is electrified independently. Since the subject is one of considerable interest, perhaps it may be useful to show that any one having access to a fairly good electrical machine can repeat and possibly extend Prof. Righi's investigations. W. F. SMITH

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Cosmic Dust

I FOUND in the *Nieuws van den Dag* of December 28, 1883, that a violet sand had been found in the dunes (probably near Scheveningen). The paragraph runs as follows:—When seen under the microscope (feeble magnifying) the ordinary yellow sand seemed to be composed for the greater part of almost white transparent grains, among which were a few light yellow, and pink, and single black grains. The violet sand, however, showed almost all the grains imbibed by a light violet tint, and moreover it contained a very great number of black glittering grains. An idea which occurred to me made me take up a small magnet, and on stirring with it in a glass full of the sand, the ends were covered by feathers formed by the black grains quite the same as the feathers which are formed on putting a magnet into filed dust. Probably I had there grains of a combination of iron; of the latter there was a great deal in it. Now this is the question: Are these grains of the same kind as those which the naturalists have found and gathered on the snow-fields in the Polar regions, thus called cosmic dust?

Stuttgart, January E. METZGER

Diffusion of Scientific Memoirs

I THINK it would promote scientific information if it were more the custom for those who need copies of papers to make direct application for them. Authors are usually provided with separate impressions for distribution, but are often much in the dark as to how to turn them to the best advantage. The bulk of such copies usually find their way to men of established scientific position who have worked at the subject of the paper in past years, but have perhaps ceased to take interest in it; while those who are actively engaged upon the subject, if they do not happen to have already published matter of importance, are left unprovided for.

I believe that most authors would willingly send copies of their memoirs to younger men, known to be engaged in scientific work, who should make application. But there is one rule which must be observed with the utmost stringency—otherwise I should feel that the evil of the present suggestion outweighs the good—viz. *the applicant must never expect a written answer.*

Cambridge R.

Weather on Ben Nevis and Snowdon

I WAS much interested with the account of a visit paid to the Ben Nevis Observatory on December 26, 1883, described in NATURE of January 3 (p. 219), more particularly as the weather experienced on the summit was almost identical with that on Snowdon at the same time. I ascended Snowdon on December 23, 25, and 26 from the west, east, and north, and a neighbouring mountain, Glyder Fach, on the 24th. The views from the summit on the 25th and 26th can be best described by the following quotation from NATURE (p. 219), referring to Ben Nevis:—"The view from the summit was magnificent. All round there floated a billowy ocean of white mist" (extending from the slopes of the mountain to the horizon north, south, east, and west), "through which rose here and there black mountain peaks." "Overhead the sky was blue," and the sun shone brilliantly. The upper surface of the ocean of clouds was on the 25th about 2000 feet, and on the 26th 1000 feet, above sea-level.

On the 24th I ascended Glyder Fach through about 2500 feet of mist, and, to again quote from NATURE (p. 219), on reaching the ridge "suddenly emerged from the gloom of the mist into the brightest of daylight. Overhead the sky was blue, a fresh light breeze was blowing" from the north-west. I here noticed a curious phenomenon. I became suddenly aware, whilst standing in the sunlight on the ridge, that the air was full of an exceedingly minute dust driven by the wind from the north-west and descending at an angle of about 40°. The fall ceased quite suddenly one or two minutes after I noticed it. The impression left on my mind was that anything popularly spoken of as dust would be exceedingly coarse compared with it. There was no snow on the ground.

The phenomenon known under the name of the "Brocken Spectre," mentioned by Mr. Chrystal, may frequently be seen from the summit of Snowdon by any one not afraid of a little mist. T. SINGTON

Kersal Moor, Manchester, January 7

Teaching Animals to Converse

J. S. B. seems to have misunderstood Sir John Lubbock's idea. It would be no great test if drawings were made, as the dog would see so little difference. Thus a dog of mine knows instantly whether he may go out with my housekeeper or not according to whether she wears her hat or her bonnet. In the first instance he knows she is going where he may go, and he is on his feet barking with joy as soon as she appears. If she has the bonnet on, he knows it to be church, or a visit to friends in the country, where he cannot go, and, like the "eldest oyster" (I quote from memory), he "winks his eye, and shakes his hoary head." If drawings of hat and bonnet were made, he would know them at once.

Some years since I had a remarkably clever Skye terrier, whose wisdom was at the time shown in a letter to the *Times*. This dog I taught as follows. When I went out it was quite sufficient to say "Yes" or "No" in an ordinary tone; but wanting to take him beyond that, I taught him very quickly to