

found a solar dust-halo, with effects like the above, more and more visible the higher he ascended amongst the Alps.

That such appearances were produced by solid particles in a cold state, and not by any new gas introduced into the atmosphere, seems to be borne out by three sets of rather extensive solar spectroscopings which I have lately carried out; for while there does not seem to be a single new line amongst the thousands of old ones, so far as I have yet examined the observations, there is only too abundant evidence of a continued dulling of the light of the sun's continuous spectrum all along its range.

This effect is of course more conspicuous in the faint regions at either end than in the bright middle, and would appear to be testified to undeniably by the following differential observation, viz. that with a prismatic apparatus, wherewith I could see lines in the bright regions, say of B, C, and D, rather better than I could with somewhat similar, but darker, prisms in 1877,—I could not see Brewster's line Y and its companion groups in the very faint ultra-red so well as I did then; and could not see the further-away line X at all, though in 1877 it was not only clear enough, but far fainter lines on either side of it were visible and micrometrically measurable. Neither in 1884 have I been able with the same eye and instrument to see anything at the violet end of the spectrum of the grand banded lines H and K, though they formed a daily subject of observation in 1877.

In 1856 I remarkably appreciated that an ascent to 11,000 feet of altitude on the Peak of Teneriffe enabled H and K to be seen with peculiar distinctness and fine resolution of much of their haze at lower levels into sharp lines; but would that have been equally the case this year, when the inhabited regions of the earth, and the lower clouds too, are covered in by a widespread blanket of dust in most anomalous extent and density?

C. PIAZZI SMYTH

Astronomer-Royal for Scotland

15, Royal Terrace, Edinburgh, September 6

Pons' Comet—Pink Glow

THIS comet was visible here up to the beginning of June. I saw it on fourteen nights in April and eighteen in May, including the last eleven nights of the latter month. It could be seen with an opera-glass up to April 3; my last sight of it was with a 4-inch telescope on June 1, or rather at 12.30 a.m. of June 2 (= June 1d. 1h. G.M.T.). On April 24, and again and particularly on May 24 it seemed to me to have become suddenly fainter, though there seemed nothing in the state of the sky to account for it; indeed, on the last-named night I have noted, "sky very clear." Up to at least May 28 its motion in two or three hours could be plainly seen. On that night, though "very diffused and faint," it was visible before the moon had set. It had not, I think, on June 2 reached the *minimum visibile*, but as I had no ephemeris subsequent to that (to the middle of April) given in NATURE, it would have been quite useless to have looked for it again after the moon had passed.

I may add that the "pink glows" have not yet left us; on the last two evenings (July 1 and 2), which were clear, they were very distinct.

A. S. ATKINSON

Nelson, N.Z., July 3

Alternation of Generations in Salpa

WHILE we are indebted to Prof. W. K. Brooks for having enunciated his views on this subject clearly in NATURE for August 14 (p. 367), I should like to point out that the misquotations which he has called attention to in an article of mine published in May (p. 67) do not invalidate the strength of the counter-arguments, although I must apologise for their having been allowed to appear.

He does not acknowledge that the question at issue is one not of fact but of the explanation of accepted fact, *i.e.* it is a question of theory. Undoubtedly an egg migrates from the body of the solitary Salpa to that of the chain form, but Kowalevsky, who himself describes this, does not agree with Prof. Brooks' conclusion drawn therefrom.

Prof. Brooks pointed out at greater length than I did that the phenomena found in Pyrosoma and Composite Ascidians culminate in those in Salpa. Beginning in Pyrosoma with "an indefinite series of hermaphrodite buds," he shows how the reproductive cell becomes marked out earlier and earlier, until in Salpa it is fully developed in the body of the gemmating individual. Then, instead of showing by his nomenclature that

Salpa is the end of a series, he prefers to break loose from any attempt at continuity and to call the solitary Salpa a true female.

I, however, prefer to follow in the steps of Prof. Moseley, who says of similar changes in the Hydromedusæ, that "it would lead to great confusion if the old way of regarding the matter was upset. The past history of the gonophores must be taken into account, and the fact that the sexual elements, though now developed at a greater or less distance in many species, formerly undoubtedly originated within the gonophore."

As Prof. Brooks does not use language in this way, it is not remarkable that he criticises me for using the term "hydroid" in regard to Cunina at a stage *comparable* to the hydriform and gemmating person of a Sertularian, although I pointed out that it is a Medusa in both generations.

The fault of Prof. Brooks' argument is that he is not consistent. He says: "Very many chain Salpæ are produced at one time. As these have no power to reproduce by budding, they have *lost their ovaries*, although each of them when it is born contains, like the bud of Pyrosoma, a single unfertilised egg."

If this means that the egg is the sole remnant of the ovary, it admits all that I contend for; but if, on the other hand, it means that in a less modified condition these must have an ovary proper to the bud as well as the ovum received from the solitary Salpa, it follows that Salpa cannot be differentiated from a form like Pyrosoma, where there is, so to speak, a migrating ovary, but no trace of ovary independently formed in the bud. The second ovary described by Salensky cannot be a trace of this, for it is simply another ovum with follicular covering precisely like the first.

R. N. GOODMAN

St. John's College, Cambridge

Forked Lightning

BY papers received by last mail I see that Mr. W. C. Gurley claims to have shown, by photographing a flash of lightning, that the ordinary notion of *forked* lightning must be given up. I do not know whether this conclusion has been drawn from the photograph of a single flash or not, but you will see from the inclosed photographs that the conclusion is an entirely false one. An examination of my photographs will show that all the flashes except one had the zigzag form, and that some of them are magnificently forked. They resemble very closely the photographs of sparks from a Holtz electrical machine, taken by Mr. A. Matheson in Prof. Tait's laboratory, and published in vol. xxvii. Part 3, of the *Transactions* of the Royal Society of Edinburgh. The amount of detail shown in the photograph of the tree illuminated by the flash gives one a very good idea of the brightness, when we consider that exposure cannot have exceeded the millionth part of a second. I may add that my first photograph was taken on October 16, 1883, and was circulated amongst friends immediately afterwards.

C. MICHIE SMITH

Madras Christian College, Madras, August 9

Sun-Glows

As one of the first to draw attention in the *St. James's Gazette* of October 1, and November 9, 1883, and many subsequent occasions, to those strange phenomena about the sun last autumn, will you kindly allow me space in your valuable columns to ask how it is possible to refer such effects any longer (as Mr. Backhouse does in your paper of August 14, p. 359) to volcanic dust from, I presume, the Krakatoa eruption, when we know now that in south latitudes these phenomena were observed by Mr. Neison of the Natal Observatory as early as the spring of 1883? He says that "they increased in intensity from February until June, when they were strongly marked." I have watched the sky as an artist (out of London) for quite forty years, and feel sure that this corona, or blanching of the sun, has been a more persistent feature of late years than formerly. It is still there, and may be seen without leaving England, or even London in clear weather, by looking for it from about an hour to half an hour before or after sunset and sunrise. The last very mild winter and the preceding one could have had no connection with the Krakatoa eruption, and I think that we must now seek for an explanation of the present and past atmospheric phenomena in some increase of solar energy, and consequent lifting of vapour higher than usual.

ROBERT LESLIE

6, Moira Place, Southampton, August 24