

Having recently had occasion to prepare some silicon, precipitated silica was heated with magnesium powder in a Hessian crucible. One quarter gram-molecule of each was employed. The heating had proceeded some little time when suddenly the mixture exploded with terrific violence, shattering the crucible to a powder and sending out a great sheet of white flame. So great was the force of the explosion that the iron ring of the retort stand which held the crucible was bent out of shape. On examination it was found that the ingredients were pure, except that they might not have been quite free from moisture.

What I wish particularly to point out is that there is not a word in any of the text-books I have referred to of the danger of a very serious explosion in the above preparation.

Perhaps someone can say, definitely, whether the presence of a trace of water will cause such a mixture to explode on heating.

F. H. POWER.

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January 26.

Intermittent Glow of the Tail of the New Comet.

IN Mr. Rolston's interesting and valuable article on the new comet (NATURE, January 27) reference is made to the statement of the Rev. F. J. Jervis-Smith that several persons observing at Lymington on January 22 thought the tail appeared to flash slightly and continuously.

Now, on the evening of that day I got the impression, on seeing the comet setting in the west-south-west, that there was an intermittent glow of the tail matter, in no very marked degree, it is true, but still there was a seeming perceptibility.

Later that evening I was told by an unskilled observer that he had seen "faint lights issue from the head and pass up to the end of the tail."

The conclusion I came to at the time exactly coincides with that referred to in the article, which is that the appearance was referable to the low position of the object and consequent atmospheric effects.

The interposition between the observer and the tail of a slight cloud or of some distant mass of smoke, though in itself too filmy to be noticed from afar off against a dark sky, would, doubtless, account for these light changes.

A correspondent once wrote to me—in some alarm, I thought—that Jupiter had on the previous evening behaved in a manner which was, to say the least, extraordinary, in that it had "kept going in and out" for five minutes on end. As the planet was then low in the sky, I concluded that the effect described by my perturbed correspondent was due to rapidly moving patches of unseen denser vapour than that which surrounded the planet, intruding in the line of sight. At the same time, I was far from being unmindful of the way in which Jupiter's light will frequently palpitate when the planet is nearing the horizon.

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72 Grange Avenue, Leeds, January 28.

Unemployed Laboratory Assistants.

A NUMBER of lads who have been employed as laboratory monitors in secondary schools, and whom the London County Council are unable to retain in their service beyond the age of sixteen years, have been referred to us by the London County Council with the view of our placing them. Some of them we have already been able to place in suitable employment, but there are still one or two on our books for whom we seek situations.

They all have an elementary knowledge of physics and chemistry. Some have learned glass-blowing and bending, and one of the applicants has already passed the Board of Education examination in chemistry (Stage I.). If any readers of NATURE would like to have further particulars of these boys, I should be glad to supply them with information.

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THE AROLLA PINE.¹

THE Arve or Arolla pine is the most beautiful of Alpine conifers. The glossy green of its acicular tufted leaves, the curving cone of its outline, the combined strength and grace of its growth, make it yet more attractive in colour and in form than the darker and sturdier spruce. It ranges, though rather fitful and sporadic in distribution, throughout the Alpine chain, passing on to the Carpathians, where, however, it does not grow nearly so high above the sea-level, but it is most abundant in north-eastern Asia, which is apparently its birthplace. There it extends northward to the tree-limit, eastward to the Altai, the Sea of Okhotsk, and the north of Japan, and westward even so far as the Lower Dwina. Between the occupants of these two provinces some marked differences exist, so that Dr. Rikli recognises an Arctic and an Alpine subspecies, to the latter of which his memoir is re-



FIG. 1.—The Arve in Youth.

stricted. The Arve is a lover of the mountains, and on these it has a rather wide vertical range. When growing wild it is seldom met with below the 1350-metre contour-line. Dr. Rikli mentions as the lowest instance one at about 1200, near Raron, in the Upper Rhone valley. Its upper limit is about 2400 metres, the highest occurrence on record being 2585 metres, on the Plattje, near Saas Fee. Such cases, however, are exceptional, where the tree obviously has had a hard struggle for existence, and it cannot be said to flourish above 2300 metres. On the Northern range of the Alps, the vertical limits within which it grows freely are narrower than in the Central—or Pennine and Lepontine—range, the difference between them, in

¹ Die Arve in der Schweiz. Ein Beitrag zur Waldgeschichte und Waldbirtschaft der Schweizer Alpen von Dr. M. Rikli. Mit einer Arvenkarte der Schweiz, einer Waldkarte von Davos, 19 Spezialkarten in Lithographie, 9 Tafeln in Lichtdruck und 51 Textbildern. (Neue Denkschriften der Schweizerischen Naturforschenden Gesellschaft, Band xlv.) Pp. xl+455. (Basel: Georg & Cie.; Zürich: Zürcher & Furrer, 1909.)

Canton Valais, being 1385 metres, and in Canton St. Gall only 270 metres.

Sometimes these pines form distinct and close-grown woods, to the exclusion of other conifers, in which each one is similarly developed. Such woods, however, are not common, and are generally restricted to the Grisons and Canton Valais, where the Arve is most abundant. More often, however, even when not mixed with other kinds, individuals grow either in more open order or in small clusters, or even as solitaires. On the slopes of the northern Alps they not unfrequently form trailing lines, the trees in which, as might be expected, often bear the marks of storm and stress. But the Arve more commonly is associated with other conifers—the larch, the spruce, the Scotch fir, and sometimes the silver fir. Another, but more lowly companion, is the Legföhre (*Pinus montana*), that trailing conifer which is more abundant in the eastern than in the western Alps, and altogether absent, so far as Dr. Rikli knows, from the Valais and the Oberland. The Arve also grows in company



FIG. 2.—The Arve in Age.

with other trees and bushes, such as the birch, the beech, the Alpine alder, a service (*Sorbus aucuparia*), and, of course, with the common rhododendron (*R. ferrugineum*), the bearberry (*Arctostaphylos uva-ursi*), the bilberry (*Vaccinium myrtillus*), and another member of that genus; while in the associated flora a mid-Europe Alpine, a north-Europe Alpine, and an Arctic-Altaian element may be detected; the last, as Dr. Rikli remarks, forming a link with the Arve's original home.

This memoir describes, with illustrations from reproduced photographs, the modes of growth which, according to circumstances, the Arve exhibits. A solitary one, when in its full vigour, is a happy combination, as Fig. 1 proves, of beauty and strength. With the advance of age it is apt to lose its symmetry and compactness, though it is still, as Fig. 2 shows, an ornament to the landscape. No more than other trees does it escape being torn by the storm or the avalanche, shattered by the lightning, and nipped, especially when young, by exceptionally

severe frosts; but when overthrown, it sometimes puts out new roots and converts side branches into leading stems. But the Arve has its enemies also among other living things. Man is responsible for reckless hacking and felling, for forest fires or damage done in climbing after its cones, the kernels in which have a nut-like flavour. But now that he is restrained by forest laws, other creatures are the more formidable. Goats, sheep, and cattle (especially the first, if carelessly tended) do much damage to the young plants; the roe-deer, the stag, and the chamois take their share when in search of food. The marten, the squirrel, and even the fox, feed on the nuts, though the last, like the wood and hazel mice, must wait until they have fallen. Some birds also have similar tastes. Most conspicuous among these is the nutcracker (*Nucifraga caryocatactes*), which is never so common in the Alps as where the Arve is plentiful and its fruit is ripening. The capercaillie (*Tetrao urogallus*) feeds on the young shoots, and the common sparrow, generally to the front in mischief, has been known to do the same with seedlings. Its insect foes we can only mention.

In short, Dr. Rikli seems to have touched on every point of interest in the life-history of *Pinus cembra* in Switzerland, and has done his work with Teutonic thoroughness. He goes over the country, canton by canton, and valley by valley, citing statistics of the numbers of the trees, their distribution on either slope, and other distinctive features; he gives many particulars of the age, size, and rate of growth of the older trees, and refers to the care which, of late years, has been bestowed on their culture. The maps appended to the volume are interesting as showing the relative abundance or scarcity of *Pinus cembra* in different districts of the Alps, and the numerous photographs, especially the eighteen separately printed, some of which are unusually good, recall to lovers of that mountain chain pleasant memories of this handsome tree. To such Dr. Rikli's work will always be attractive; but to students of forestry it will be indispensable.

T. G. B.

ON HALLEY'S COMET AS SEEN FROM THE EARTH.

THE following table gives ecliptic coordinates of Halley's comet to two decimal places at intervals of four days through an arc extending from one end to the other of the *latus rectum* of its orbit. The zero of time is very nearly the moment of perihelion passage, and the figures apply approximately to any return.

Day	x	y	z	Day	x	y	z
-52	+0.95	+0.73	+0.12	+4	+0.21	-0.54	+0.15
-48	+0.93	+0.64	+0.13	+8	+0.10	-0.59	+0.13
-44	+0.91	+0.55	+0.14	+12	-0.02	-0.64	+0.11
-40	+0.89	+0.46	+0.15	+16	-0.13	-0.67	+0.09
-36	+0.86	+0.37	+0.16	+20	-0.24	-0.69	+0.06
-32	+0.83	+0.27	+0.17	+24	-0.34	-0.70	+0.04
-28	+0.80	+0.18	+0.18	+28	-0.45	-0.71	+0.01
-24	+0.75	+0.08	+0.18	+32	-0.55	-0.71	-0.02
-20	+0.70	-0.02	+0.19	+36	-0.64	-0.70	-0.04
-16	+0.65	-0.12	+0.19	+40	-0.74	-0.70	-0.07
-12	+0.58	-0.21	+0.19	+44	-0.83	-0.68	-0.09
-8	+0.50	-0.31	+0.19	+48	-0.91	-0.67	-0.12
-4	+0.41	-0.39	+0.18	+52	-1.00	-0.65	-0.14
0	+0.31	-0.47	+0.17				

The comet attains unit distance from the sun thirty-nine days before and after perihelion passage. On the former occasion its z coordinate perpendicular to the ecliptic is +0.15, on the latter -0.07. It is evident, therefore, that the closest possible approach to the earth will occur after perihelion passage. The