

In conclusion, I will give a list of the arrow-points gathered on Wednesday, July 31, during the course of a three hours' search, and over fields that have yielded hundreds during the past and present summers.

Nos. 1—5, genuine leaf-shaped arrow-heads; four of black jasper or hornstone; all symmetrical, perfect. The largest specimen measures five-eighths of an inch in width at widest part, which is near the base, which is a beautifully wrought half-circle. The length is one inch and eleven-sixteenths. The other four specimens are somewhat smaller; one a little broader; and none can be considered as rough or badly-made examples.

Nos. 6—8 are what may be called triangular arrow-points, but are different from the ordinary examples of that pattern, in that they have very concave sides and base, and a rounded rather than pointed tip. Nothing in any way similar is figured by Mr. Evans, nor was I acquainted with this pattern when I wrote of our arrow-heads in the April No. of the *American Naturalist*. These arrow-points vary little in length and width; being about an inch and a quarter to an inch in length, by about one in width. The main portion of the specimen and the projecting barbs are nearly the same length, and have all the same degree of finish. One specimen is of brown jasper, one of hornstone, and the third, we suppose, is what Mr. Evans means by "chert."

Nos. 9—14 are triangular arrow-points, with straight or very slightly convex sides, and well-marked concave bases. None measure over an inch in length, by three quarters of an inch in width. One specimen is of "chert," three of hornstone, one of green, and one of chocolate jasper. The finish of all is good, and of two in particular very fine. The chocolate-coloured jasper example has a row of uniformly shaped notches or serrations, throughout the greater part of one side.

Nos. 15 and 16 are triangular arrows, both of which have straight bases, and one with straight sides, the other with very convex sides. Both are well finished, and the smaller quartz specimen with the convex sides is as smooth, well-edged and pointed, as though it had been "rubbed" down.

No. 17 is a yellowish "flint-like" stone, chipped into an arrow-point of the triangular pattern, but with a notch in the base, and also at each side. This form I have figured in the *American Naturalist*. It is but sparingly met with, and is there called a stemmed arrow-head, or one with a projecting base, which I think now is scarcely correct; the notches at the sides and base give it a "stemmed" appearance only.

Nos. 18—20 are three fine specimens, having projecting stems, which are narrower than the body of the specimens, and are not notched, but taper to a blunt point. Mr. Evans's figures 300 and 301 and the base of 302 well represent the specimens now lying before me.

Nos. 21—25 are stemmed arrow-points, with notches, that is, the "base" projects beyond the base of the body of the specimen, which gives "barbs" to the weapon—a style not given by Mr. Evans; or the base or "tang" is narrower than the body of the specimen, and flaring at its termination, produces the notches, by which the shaft was attached. A poor example of this pattern is Mr. Evans's figure 303. One of these "tanged" arrow-points has a projecting "tip," like that figured by Mr. Evans, as a peculiar feature of his leaf-shaped arrow-head, figure 283.

Nos. 26—33 are plain "tanged" arrow-heads, very similar to Mr. Evans's figure 304, which he refers to as "a magnificent specimen." The only marked difference in the little series before me and the illustration mentioned is that the tangs are all broader and a little shorter. The specimens themselves are not much smaller. They are of slate, jasper, hornstone, and "chert."

No. 34 is a lozenge-shaped arrow-head, very similar to Mr. Evans's figure 277, but is somewhat smaller. It varies from everything I have found as yet, and is a reproduction of those lozenge-shaped specimens, only of handsomer outline, that Mr. Evans has found on the Yorkshire wolds. The finding of this specimen lessens the number of forms found in Europe, that have not occurred here.

Besides these thirty-four specimens, which are all perfect, I gathered innumerable "chips" and broken specimens, some of them being of patterns not enumerated in my list. I have here briefly referred to nine distinct patterns, numbers of which, save two, were found during one day's hunting; and the result in numbers and varieties was nothing more than "a good average." I cannot therefore admit any one form to be a "prevailing" type, and the idea of inferior finish and of general

elegance of appearance, is, we respectfully assert, a very great mistake.

CHAS. C. ABBOTT

Trenton, New Jersey, Aug. 5

#### Millions of Millions

THE fact that I have myself slipped into an error by writing eleven noughts instead of ten in setting out a number expressed by a row of sixteen integers, only serves to confirm my former remark that millions of millions are awkward numbers to deal with, and that it will be well to avoid them by making use of the very simple rule-of-three sum indicated at the end of my list of errata to Professor Mayer's paper.

A COWPER RANYARD

#### Fertilisation by Moths

It has recently been suggested to me that the following note on the readiness with which moths wander, and their efficiency in fertilising orchids, is worth publication; I therefore forward it to you.

In the summer of 1869 I caught here on an island of less than six acres, in the middle of Derwentwater, twenty specimens of the common 'shark' moth (*Cucullia umbratica*); of these, seven had the pollinia of the butterfly orchis (*Habenaria chlorantha*) sticking to their eyes. I know for certain that there were no plants of *H. chlorantha* growing on the island, and all the moths must have come from places separated from the island by half a mile of water.

W. C. MARSHALL

Derwent Island, Sep. 9

#### Origin of Insects

MR. J. J. MURPHY, in writing "that it is true that the water-beetles are wingless" (*NATURE*, No. 140, p. 373), has surely made a *lapsus calami*, since many water-beetles are not only winged but use their wings. Other orders furnish examples of an aquatic winged insect fauna. The hemipterous genera *Notonecta*, *Corixa*, &c., are well-winged, and use their wings (especially *Notonecta*). *Corixa* affords an example of the elytra (*i.e.* the front wings) assisting in respiration, but probably not in the way that Mr. Murphy means. At the base of the anterior margin of the elytron there is a channel which retains a supply of air. Of course everybody knows the use of the elytra in *Dytiscus* to catch and retain air.

The Lepidopterous genus *Acentropus* affords another instance. The perfect winged insects frequently descend into the water. The females are sometimes winged and sometimes apterous, and the winged male has been seen entering the water in pursuit of—it is supposed—the apterous virgin female.

I think that it is possible that these apterous females exhibit the same kind of "parthenogenesis" as occurs in the *Psychide*. It would be well if those observers who have an opportunity would try to ascertain if parthenogenesis ever occurs in *Acentropus*.

F. BUCHANAN WHITE

#### Solar Spots

BY an observation of the sun this morning at 11h. 25m., I find that several parts of his surface are in a disturbed condition, and that several largish spots (*macule*), surrounded with penumbrae, are visible. In the north-west quadrant of the disc, near the west limb, there was a group seen, in which two rather conspicuous spots were situated, and below these, in the southern hemisphere, there were three others of somewhat considerable dimensions. In the same hemisphere there was an irregular train of spots of various forms and sizes, extending almost to the margin of the south-eastern part of the disc. In the north-east quadrant I could discern no spots at all. Light clouds were continually passing over the sun during the time of observation. I used a 4-inch metallic-mirror reflector, with the aperture contracted to three inches.

WILLIAM F. DENNING

Bristol, Sept. 8

#### Correlation of Colour and Music

A VERY brilliant rainbow, which occurred on the evening of September 6th, recalled to my mind the note on the correlation of colour and music by Mr. W. F. Barrett, which appeared in