

world depends, now as formerly, mainly on Germany for the progress it makes in the knowledge of the functions of life.

"It is ONE of the melancholy things connected with publication in government reports," writes one connected with the government, "that your work appears so many years after it has been completed, that the author has in the mean time quite outgrown it, and developed into another stage of opinion and activity." This is not a matter of months only, but of years, and, though not so serious a difficulty as formerly, is still a great drawback to efficient and effective work. The administration of the public printing-office is such that every thing has to give way to congressional documents which are often of the smallest value. Is there no remedy for this uncomfortable state of things?

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Progress of vegetation in the Ohio valley.

THE spring of the present year has been very late in the valley of the Ohio; so late, indeed, that nearly every one has said that it has not been so long coming for many years. A review, under these circumstances, of a record kept of the early-flowering plants for eight years, may be of interest. The first appearance of flowers is a more reliable indication of the state of the weather than the thermometer. Plants indicate the general average of climatic conditions; and the species, appearing in much the same sequence,

indicate the progress of spring. In the table of fifteen species here presented, of the first flowers which generally appear, a number of facts are to be noted. It is to be noticed that every alternate year is a cold year, or one, at least, with a late spring. The years 1874, 1876, 1878, and 1884 are early ones, while 1875, 1877, 1883, and 1885 are late.

In 1874 eleven out of the fifteen plants were observed between March 19 and 26, a period of eight days; in 1876 nine out of the fifteen were seen between Feb. 12 and March 14, just a month; in 1878 the eleven of which there is record were found between March 3 and March 18, or sixteen days; while in 1884 the thirteen were recorded between March 16 and 30, or fifteen days. These were the early years. In 1875 fourteen out of the fifteen bloomed between March 30 and April 11, or in thirteen days; in 1877 two were out on March 4, none others until April 1, and between that and the 12th twelve came out; in 1883 two were out on March 4, one on March 13, and ten between April 6 and 12; lastly, in the present year the first flower did not appear until April 1, and thirteen others bloomed up to the 20th.

Account is here taken of only fifteen species. More than this number appeared during the time between the earliest and latest dates; but the ones here considered may be regarded as the *typical* early flowers. They represent eleven different orders.

The earliest year of the eight is 1876. In that year the spring cress (*Cardamine rotundifolia*) was in bloom Feb. 12, and the dandelion (*Taraxacum dens-leonis*), generally the earliest composite, on April 7. In 1875 the first flower, red elm (*Ulmus fulva*), was in bloom March 30, and the dandelion on April 29; while in the present year, in many respects the counterpart of it, the first flower, white maple (*Acer dasycarpum*), was out April 1, and the dandelion on the 26th. But even 1875, the latest of all, was, on an average, six days in advance of this year. This season is, then, nearly a week later than any in eight recorded years, and is seven weeks and two days behind the earliest year (1876) of the same eight.

In scanning the list, it is further found that three out of these fifteen early flowers are trees; nine of the remainder are provided with bulbs, tubers, or rhizomes, in which nourishment is stored up; one (*Anemone acutiloba*) has persistent evergreen leaves; and only the remaining two (*Capsella* and *Taraxacum*) seem to have no special fund upon which to draw. The importance, then, to herbs, of a store of matter

SPECIES.	1874.	1875.	1876.	1877.	1878.	1883.	1884.	1885.
<i>Acer dasycarpum</i>	-	4-4	2-26	4-1	3-8	3-4	3-23	4-1
<i>Symplocarpus foetidus</i>	4-19*	4-6	2-13	3-4	3-3	3-4	3-18	4-5
<i>Erigenia bulbosa</i>	3-26	4-6	2-13	4-1	3-3	4-8	3-16	4-5
<i>Anemone acutiloba</i>	3-19	4-6	4-2*	4-1	3-8	4-6	3-23	4-12
<i>Sanguinaria Canadensis</i>	3-29	4-8	-	4-1	-	4-12	3-24	4-12
<i>Ulmus Americana</i>	3-22	4-4	2-27	4-1	3-8	4-6	3-16	4-6
<i>Ulmus fulva</i>	3-19	3-30	2-27	4-1	3-10	4-6	3-28	4-10
<i>Cardamine rotundifolia</i>	3-22	4-7	2-12	3-4	3-8	3-13	3-23	4-18
<i>Erythronium albidum</i>	3-26	4-8	3-14	4-12	3-18	4-12	3-23	4-18
<i>Claytonia Virginica</i>	3-22	4-6	2-13	4-1	3-8	4-8	3-24	4-18
<i>Capsella bursa-pastoris</i>	3-22	4-7	4-2*	4-2	3-10	4-13	3-30	4-19
<i>Anemone thalictroides</i>	3-22	4-7	3-12	4-1	3-10	4-6	3-27	4-19
<i>Dentaria laciniata</i>	4-6	4-11	4-2*	4-7	-	4-12	3-30	4-20
<i>Jeffersonia diphylla</i>	4-20	4-11	-	4-8	-	-	-	4-20
<i>Taraxacum dens-leonis</i>	4-19	4-29	4-7	4-15	-	-	-	4-26

* These were probably in bloom at an earlier date than this; but they are so recorded in my note-books, and were seen first on the dates given.

which can be speedily utilized at the first opportunity, is here well shown.

JOS. F. JAMES.

Cincinnati, April 28.

Prehistoric fishing.

In Professor Rau's interesting work on prehistoric fishing is a series of Indian bone and horn fish-hooks, ending with a figure that I sent him of one found on an early site on the line of Onondaga county, N.Y. I was especially interested in this object; because it was the first thing found there that seemed to show any knowledge of Europeans, although the site was connected with later sites, near by, by several peculiar relics. The general form of the hook, with its distinct barb, was so like some of the present day, that I naturally thought the Indian maker had at least seen a white man's hook. The series in Professor Rau's work gave rise to doubts, as the main difference in this and others figured was in the barb. I was thus led to see the force of Dr. Rau's remark in his introduction: "I would not venture to say that barbed fish-hooks had been unknown in America in ante-Columbian times; I simply state that none have fallen under my notice."

In looking over some drawings of relics made about three years ago, my attention was arrested by one which I had labelled 'horn perforator.' The more I looked, the more the conviction strengthened that it was the barb of a fish-hook. Borrowing the fragment, I drew it again, after careful examination, and then sent the fragment to Dr. Rau for inspection. He says, "It certainly has the appearance of the barb of a fish-hook." The fragment is one inch and five-sixteenths long by about one-twelfth of an inch thick; from the point to the present end of barb, fifteen-sixteenths of an inch; while the width at the barb is about five-sixteenths; that of the shank, one-eighth of an inch. It is very sharp. There seems to have been a defect in the material, which caused the sharp point of the barb to break off, and which weakened the hook itself. This came from an early site where I have gathered many articles myself, and all are clearly prehistoric. The large copper spear figured by me for Dr. Abbott's 'Primitive industries' came from the same field.

Yet I think the New-York Indians seldom used hooks. All the early references are to fishing with nets and spears; and our Indian village sites are seldom on the shores of deep lakes, almost always by streams, or near the shallow rifts of rivers. Stone fish-weirs are not uncommon, probably used as they were farther south. One of three deep bays which I measured was a work of great magnitude. Nets were much used, and I have found the flat sinkers on sites far away from the water. These were small, however. The large ones, measuring six to seven inches across, I have only found on the river-bank.

A small cylindrical sinker of brown sandstone, grooved around the centre, was probably used on a line. The ends are rounded. A rough tube of copper, two and a half inches long by three-fourths in diameter, found by the Oneida River, I have thought might have been attached to a line, as well as the polished stone plummets.

The polished slate arrows of the Seneca and Oswego rivers, and of one part of Lake Champlain, I think may prove to be fish-knives, being much like a double-

bladed knife of broad form. They would have been admirable for opening and skinning fish, had savages been so fastidious.

W. M. BEAUCHAMP.

The ruddy glow around the sun.

In November, 1883, at the time of the remarkable after-glows, I noticed that there was a broad, reddish ring around the sun even at mid-day. Soon after, I briefly described the appearances in *Nature*. Since then, I have constantly observed this phenomenon. The sky is very bright for about ten degrees from the sun; then comes the ruddy zone about twenty degrees wide, the deepest color being at about the natural distance of halos. My observations show that at this place there are but few days of the year when the chromatic glow is not visible; but it varies in intensity not only from day to day, but even from hour to hour. About a year ago I discovered that an increase in the depth of color preceded a fall in the temperature, and the formation, first of a structureless haze in the upper atmosphere, and, soon after, of cirrus-clouds. At other times storms came on with no increase in the depth of color. Soon it became evident that the latter cases were when rain fell, and the general temperature was not low. Hail and sometimes snow storms were accompanied by great depth of color. During the summer of 1884, I passed several weeks in Maine. On two occasions the colored zone appeared around the sun as distinctly as it ordinarily does here. Both times the appearance of the glow was followed by violent thunder-storms, with high winds and hail.

While temperature would not affect the diffractive power of particles of volcanic dust directly, yet it is possible that at a low temperature the dust particles, on account of the condensation of the air, may be enough nearer to each other to give a perceptibly greater diffractive power to the mass of air in which they are suspended. But so often has an increase in the depth of the circumsolar glow preceded the formation of clouds, that it seems far more probable that the glow is caused by the precipitation of atmospheric moisture at low temperatures. If dust is involved in the process, it is probably only by its increasing the depth of color, or by its facilitating the precipitation of moisture.

In substance, these views have been expressed verbally to numerous persons for more than a year past. They are published now not merely as a matter of theoretical meteorology, but also for a practical purpose. The observations here recorded make it probable that the glow may be utilized as a prognostication of hail. It goes without saying, that it will be of great value to many, especially to those who have much exposed glass on the roofs of green-houses, etc., to be able to predict hail and a fall in the temperature. It is true that other localities than those named may not show the same phenomena. The subject is worthy of the careful study of the signal-service, and of meteorologists generally.

G. H. STONE.

CARL THEODOR VON SIEBOLD.

THE death of Carl Theodor Ernst von Siebold, the last survivor of three distinguished brothers, deprives Germany of one of her most honored men of science. His investigations had ceased, owing to illness and the encroach-

