subsequently published genus or species, respectively.')

It may be that the 'subsequently published species' refers to the application of an original specific name and not a binomial. But Rule 7 says: 'Publication of a species consists only * * * (2) in the publishing of a binomial, with reference to a previously published species as a type.'

While it is not my object here to advocate any particular set of rules, but only to point out the way these rules work in practice, I would observe that in the above case:

1. The use of the original specific name, when the identity of *Festuca spicata* Pursh is discovered, gives us two new names, *Agropyron spicatum* Rydb. and *A. Smithii* Rydb. This must always occur when the displaced binomial has no earlier synonym, and even when there is an earlier available name there results a change of names.

2. If a binomial has precedence over the specific name, that is, if in transferring a species to a different genus, the earliest specific name is used except where this specific name already occurs, there is not more than one new binomial. In the case under consideration, as there is already an *Agropyron spicatum* S. & S., if *Festuca spicata* Pursh is transferred to the genus *Agropyron,* it would ordinarily be given a new binomial, but as the name *A. divergens* Nees has been applied to the same species, no new binomial is necessary.

3. If the earliest specific name which the plant has received in a given genus is used, the so-called Kew rule, no subsequent changes are necessary, so long as the plant is assigned to this genus. Subsequent investigations regarding earlier names under other genera may add to our knowledge, but will not alter the binomials. From the standpoint of stability the maximum would appear to result from following the third method.

A. S. Hitchcock.

Remains of Elephants in Wyoming.

I am not aware that any elephant remains have ever been reported from Wyoming, and for this reason wish to make a record of the following notes: During the fall of 1894 Mrs. Dover, of Dover P. O., Albany Co., discovered the lower jaw of a very small elephant in Halleck cañon, which is about forty-five miles north and east of Laramie. The fossil was covered with a thin coating of earth in the valley wash, and not petrified. It was badly taken up, and by the time it reached me was very fragmentary. The front of the jaw has been well preserved and the right molar is nearly complete. The jaw and teeth are exceptionally small and probably indicate a new species. It is interesting to note that this specimen was found at an elevation of about 6,500 feet above the sea. The remains have been donated to the university, and in due time will be described.

Three years ago, while at work in the Goshen Hole region, I found an elephant's tusk that had been cut in two by a cattle trail that was not over a foot in depth. The tusk was over six inches in diameter. No doubt there is more or less of an animal at this place; but no attempt has been made to unearth it.

While at Casper a few years ago a stockman described a tooth which one of his riders had brought into his ranch, and which he had sent east as a present to a friend. From his description it must have been a very large tooth of an elephant. While this datum has little if any value, yet it is quite certain that an animal or a portion of an animal was found in that region.

To this I wish to add another note, which, although not in connection with Wyoming data, adds some important information to this subject. Two years ago, while at work near Fossil, a collector brought to me a beautiful elephant's tooth of unusual size. He informed me that he had taken it from the bottom of a well very near Bear Lake, Utah. This well was about twenty feet in depth and the tooth was found in rather fine gravel. The tooth belonged to *E. primigenus,* judging from its size and the arrangement of the plates. It is interesting to note that the elephant lived at rather high elevations, as well as along the streams of the plains and the lower areas of North America. It is also

quite probable that there were highland or mountain species that have not been described.

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CURRENT NOTES ON METEOROLOGY.

SNOW CRYSTALS.

MENTION has already been made in these notes of the micro-photographic study of snow crystals which has been carried on for twenty years by Mr. W. A. Bentley, of Vermont. In the 'Annual Summary' of the *Monthly Weather Review* for 1902 (dated March 16, 1903), Mr. Bentley has a further contribution to this subject, in which he gives the results of his studies of snow crystals during the winter of 1901–02. The classification proposed by Hellmann ('Schneekrystalle,' Berlin, 1903, p. 38) is adopted as the best. It has been found that in general the great majority of perfect crystals are produced in the western, southwestern or northwestern portions of widespread snowstorms. The whole number of photographs of individual crystals taken by Mr. Bentley is now somewhat over 1,000, and no two are alike. This is doubtless the most complete collection in the world. The article contains 22 plates giving half-tone reproductions of 255 separate snow crystals—altogether a most beautiful collection.

STRUCTURE OF CYCLONES.

THE January number of the *Monthly Weather Review* contains a paper by Professor F. H. Bigelow on 'The Structure of Cyclones and Anticyclones on the 3,500-foot and 10,000-foot Planes for the United States.' In this paper charts are given showing, for the cyclones of January 2 and 7, 1903, the distribution of pressure and temperature at sea level, at 3,500 feet and at 10,000 feet. In reducing the station observations of pressure and temperature to the two high-level planes, Professor Bigelow used the tables prepared by him and published in his report on Barometry, a brief note on which appeared in SCIENCE for April 10, page 595. As Professor Bigelow says, these charts 'have special interest from the fact that this is the first exhibit of the isobaric systems in the upper air surrounding individual cyclonic and anticyclonic centers.'

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BOTANICAL NOTES.

A NEW CLASSIFICATION OF PLANTS.

IN his new syllabus of the plant-families ('Syllabus der Pflanzenfamilien,' 1903), Engler makes a considerable modification of the system of plants which he has followed heretofore. In the edition of the 'Syllabus' which appeared in 1898, four branches ('Abteilungen') of the vegetable kingdom were recognized, as follows: (1) Myxothallophyta, (2) Euthallophyta, (3) Embryophyta Zoidiogama, (4) Embryophyta Siphonogama. The changes in the new edition consist in breaking up the Euthallophyta into ten branches, thus increasing the whole number from four to thirteen. This very materially changes the grouping of the algæ and fungi which make up the bulk of the Euthallophyta. The branch Myxothallophyta remains unchanged, except in minor details as to group names, and the same is true of Embryophyta Zoidiogama and Embryophyta Siphonogama.

The new grouping is as follows:

Branch ('Abteilung') 1. PHYTOSARCODINA (Myxothallophyta), with three classes, Acrasiales, Plasmodiophorales and Myxogastres.

Branch 2. SCHIZOPHYTA, with two classes, Schizomycetes and Schizophyceae.

Branch 3. FLAGELLATAE.

Branch 4. DINOFLAGELLATAE.

Branch 5. ZYGOPHYCEAE, with two classes, Bacillariales and Conjugatae.

Branch 6. CHLOROPHYCEAE, with three classes, Protococcales, Confervales and Siphoneae.

Branch 7. CHARALES.

Branch 8. PHAEOPHYCEAE.

Branch 9. DICTYOTALES.

Branch 10. RHODOPHYCEAE, with two classes, Bangiales and Florideae.

Branch 11. EUMYCETES, with five classes, Phycomycetes, Hemiascomycetes, Euascomycetes, Laboulbeniomycetes and Basidiomycetes.

Branch 12. EMBRYOPHYTA ASIPHONOGAMA, with two subbranches ('Unterabteilungen') as follows: