OLD AND NEW CLASSIFICATION.

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Change of classification is an inconvenient necessity. But no one would cling to an outworn system merely on grounds of convenience. We all claim to be ready to change our system when a new and better one is worked out. It is much more difficult to recognize that a new system is better than an old one. All the force of habit, and all of our personal experience in organizing ideas for ourselves and for others tend to make us feel that an old system has, after all, such marked advantages of clearness and convenience as to make the old really better than the new. For a system of classification is nothing more than a summary of all our knowledge about the things classified, in convenient form for thought, teaching and research.

To the teacher, however, the value of the system to a pupil looms large in importance, and all of us older fellows must grant that a proper bringing up of the next generation is much more important than the temporary convenience of our own plans. How much we have all had to unlearn! Let us not place this same burden upon our successors. For the beginners of today have no prejudices in favor of any system of classification. We actually find our students absolutely open minded and receptive.

The bearing of these principles upon the classification of plants as found in current texts is very obvious. We have long been tied to a fourfold division of the vegetable kingdom: Thallophyta, Bryophyta, Pteridophyta and Spermatophyta. The groups seem to us remarkably easy and "natural." But in making these groups coordinate, we hide the deep affinities which bind the last three groups onto the old Archegoniatae, or the more recent Embryophyta. We find that students can learn just as easily a twofold division of plants into Thallophyta and Embryophyta. The many other advantages of such a division cannot be developed here.

Similarly the Embryophyta, instead of falling into the three accustomed phyla, separate just as readily in the mind of the beginner into the simple, ductless mosses, Atracheata, and the vascular series or Tracheata. The Tracheata are divided into Lycopsidea and Pteropsida, for reasons too well known to need mention. These are the two most ancient and fundamental phyla.

Finally, the Pteropsidan series is made up of the seedless fern group (Aspermae), the Gymnospermae and the Angiospermae.

That the system outlined above comes as near as possible to presently accepted views on phylogeny, I suppose, will not be questioned. It has the logical advantage of almost complete dichotomy. Further, it emphasizes those characters which have undoubtedly been of greatest influence in determining the survival and superiority of each successive group. In synopsis the grouping stands thus:

Thallophyta

Embryophyta

Atracheata Mosses

Tracheata (Vasculares)

Lycopsida

Pteropsida

Aspermae

Gymnospermae

Angiospermae

Experience with beginning students proves that this scheme is at least as easy as any other, and that it is more suggestive of the outstanding facts of plant structure and development. As it is essentially the system used in most modern botanical thought, may we not hope, by friendly criticism and correction, to get it promptly into shape for adoption and for presentation to our pupils?

Note—A somewhat extended presentation of this outline is about to appear in *The Plant World*.

AN IMPROVED SPINTHARISCOPE.

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In 1903 the great English scientist, Sir William Crookes, devised an instrument for demonstrating the presence of alpha rays which are given off by radium and other radioactive materials. He found that an alpha particle impinging on a crystal of zinc sulphide or hexagonal zinc blende gives rise to a flash of light and the alpha particle becomes a particle of helium gas. Hence, radium has the ability to change into another element, namely, helium.

The foregoing instrument, called the spinthariscopes, is constructed as follows: A metallic needle carrying a bit of radioactive salt is supported about one-eighth of an inch above a