the buttercups (*Ranales*), water plantains (*Alismales*), and roses (*Rosales*) are to be regarded as primitive, and as a consequence they must stand at the beginning of the great phylum *Anthophyta*, as also each must stand at the beginning of its smaller phylum. That the phylum beginning with the water plantains (*Alismales*) must find its highest development in the irises (*Iridales*) and orchids (*Orchidales*) can not be doubted; nor can it be questioned that grasses (*Graminales*), calla lilies (*Aroidales*) and palms (*Palmales*) must now stand as reduced from the type of the lilies (*Liliales*). This leaves no room for radical differences of opinion, and in fact little room for any but the most minor differences in regard to the proper sequence of the monocotyledonous families.

In like manner beginning with the Ranalian type in the dicotyledons, it is obvious that one phyletic line culminates in the gamopetalous, bicarpellate, hypogynous order of the mints (*Lamiales*), while another passes through the roses (*Rosales*) (if indeed they are not themselves primitive), and umbelworts (*Umbellales*) to the sunflowers (*Asterales*). Here again, with regard to the details as to the intermediate orders there may be much difference of opinion. Yet there will be no question that in one line the pinks (*Caryophyllales*) and mallows (*Malvales*) are lower than primroses (*Primulales*) and heaths (*Ericales*), nor that the latter are lower than phloxes (*Polemoniales*) and mints (*Lamiales*). In the other line the myrtles (*Myrtales*) are clearly lower than umbelworts (*Umbellales*), while the latter are manifestly lower than madders (*Rubiales*), and these than sunflowers (*Asterales*). In fact when we agree to the hypothesis that polypetalous, hypogynous, apocarpous flowers are primitive the great outlines of the phylum (or phyla) are quite obvious, and the only questionable points are with reference to the place and sequence of intermediate orders. And it is here that much critical work invites the close attention of taxonomists. The great outlines—the boundaries of the phyla—are drawn, but the particular manner in which many of the interior families are related to each other has not yet been made out.

The principles here brought forward, and the general plan which I have so hastily sketched, have been so serviceable in the presentation of the subject of taxonomy in my lectures to university students that I venture to lay them before you as a general working hypothesis. My own success in its use encourages me in the hope that in the hands of others it may be equally helpful in enabling the student of taxonomy to more clearly apprehend the mode of evolution in the vegetable kingdom, and the consequent relationship of the resulting multiplicity of types.

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THE DARWIN CENTENARY AT CAMBRIDGE

Some details are given in the London *Times* of the celebration by the University of Cambridge of the centenary of the birth of Charles Darwin and the jubilee of the first publication of "The Origin of Species." It is expected that delegates selected by universities, academies, colleges and learned societies will arrive in Cambridge on Tuesday, June 22, and that the arrangements for their entertainment, which are, however, subject to alteration, will be as follows: On the evening of the twenty-second there will be a reception, probably in the Fitzwilliam Museum, by the chancellor. On Wednesday, June 23, addresses will be presented by the delegates to the university in the senate house. It is hoped to present to each delegate a copy of the first draft of "The Origin of Species." In the afternoon there will be a garden party at Christ's College, where Darwin was a stu-

dent, and in the evening the university will give a banquet. On Thursday, June 24, the Rede lecture will be delivered, and honorary degrees will be conferred. It is further proposed to hold an exhibition of portraits, editions and relics of Darwin at Christ's College, somewhat similar to the Milton exhibition of last June.

Already some 200 delegates have been appointed to represent institutions, including:

Professor W. G. Farlow, American Academy of Arts and Sciences, Boston; Professor C. S. Minot, Boston; Professor R. H. Chittenden, Yale University, New Haven; Professor E. B. Wilson, Columbia University, New York; Dr. J. M. Baldwin, Johns Hopkins University, Baltimore; Professor J. Loeb, University of California, Berkeley; Dr. H. F. Osborn, American Philosophical Society; Dr. L. O. Howard, Academy of Sciences, Washington; Mr. C. F. Cox, Academy of Sciences, New York; Domingo Gana, Universidad de Chile, Santiago; Hofrat Dr. L. von Graff, Gratz; Professor Vejdovsky, Prague; Hofrat Dr. F. Steindachner, Vienna; Professor E. van Beneden, Brussels; Professor H. F. E. Jungersen, Copenhagen; Professor Cuénot, Nancy; M. van Tieghem, Institute de France, Paris; Le Prince Roland Bonaparte, Institute de France, Paris; Professor E. Metchnikoff, Pasteur Institute, Paris; Ober-Regierungsrat Professor Adolf Engler, Deutsche Botanische Gesellschaft, Berlin; Dr. F. von Luschan, Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Berlin; Professor Kukenthal, Breslau; Professor Max Verworn, Göttingen; Professor Bütschli, Heidelberg; Professor R. Hertwig, Munich; Professor Goebel, Munich; Professor E. Ballowitz, Münster; Professor Graf zu Solms-Laubach, Strassburg; Professor Th. Boveri, Würzburg; Professor H. de Vries, Amsterdam; Professor J. H. van Bemmelen, Groningen; Professor A. A. W. Hubrecht, Utrecht; the Italian Ambassador, Marquis of San Giuliano, Società Geografica Italiana, Rome; Professor C. Ishikawa, Tokio; Dr. W. C. Brögger, Christiania; Professor V. M. Simkevic and Professor V. V. Zalenskij, St. Petersburg; Professor H. Théel, Professor Chr. Aurivillius and Professor A. G. Nathorst, Stockholm; Dr. Paul Sarasin, Zurich; the Right Hon. Sir John Buchanan, University of Cape of Good Hope, Cape Town; Sir Richard Solomon, University College, Johannesburg; Professor A. Liversidge, Royal Society of New South Wales, Sydney; Sir E. T. Candy, the University, Bombay; Sir Lewis Tupper, Panjab University, Lahore; Dr. J. C. Willis, Royal Botanic Gardens, Peradeniya; Professor E. Rutherford, Christchurch, New Zealand; Sir Oliver Lodge, Birmingham University; Sir Isambard Owen, Durham University; Dr. A. W. W. Dale, Liverpool University; Sir Archibald Geikie, the Royal Society, London; Lord Avebury, Sir T. Lauder Brunton and Sir E. Ray Lankester, the Royal Society, London; Mr. Francis Darwin, British Association for the Advancement of Science; the Duke of Northumberland, the Royal Institution, London; Sir James Crichton-Browne, the Royal Anthropological Institute, London; Lieutenant-Colonel D. Prain, Royal Botanic Gardens, Kew; Professor G. C. Bourne, Dr. F. Gotch and Professor E. B. Poulton, Oxford University; Sir Charles Eliot, Sheffield University; Mr. R. F. Scharff, Royal Zoological Society, Dublin; Professor W. C. McIntosh, St. Andrews University; Sir William Turner and Professor Cossar Ewart, Edinburgh University; Principal E. H. Griffiths, University College, Cardiff.

WOLCOTT GIBBS

THE death of Wolcott Gibbs takes a commanding figure from the ranks of the veterans of science. Attaining the age of over eighty-six years, he had been for a long time almost the sole survivor among the pioneers of American chemistry. He was one of the founders of the National Academy of Sciences in 1870; and he alone saw his name included among those of living members in 1908.

For over a decade he had headed in academic seniority the list of the faculties of Harvard University. He served there as Rumford professor for twenty-four years, and in honorable retirement bore the title of Rumford professor emeritus for twenty-one years more. The infirmity due to his increasing years had withdrawn from him the privilege of contributing to the growth of his beloved science; but his interest in the work of others remained keen and enthusiastic until the end had almost come—until pain had driven away all the joy of life.

It has been said that he was one of the pioneers of American chemistry. He was made assistant professor in New York at the age of twenty-six in 1848. His eager and energetic spirit and his thorough training