

The M. A. C. RECORD.

MICHIGAN STATE AGRICULTURAL COLLEGE.

VOL. 9.

LANSING, MICHIGAN, TUESDAY, APR. 5, 1904.

No. 28

OFFICERS OF M. A. C. ALUMNI ASSOCIATION.

President, R. A. Clark, '76.
1st Vice President, L. G. Bregger, '88.
2nd Vice President, P. G. Towar, '85.
Secretary-Treasurer, W. S. Holdsworth, '78.
Orator, R. S. Baker, '79; alternate, B. G. Halstead, '71.
Historian, C. J. Monroe, '68; alternate, Jason E. Hammond, '86.
Poet, Pearl Kedzie Plant, '98; alternate, Irma G. Thompson, '00.
Necrologist, H. W. Mumford, '91; Alternate, A. B. Cook, '93.

RESOLUTIONS.

WHEREAS: The all-wise God has seen fit to call the father of Mr. J. A. Cavanagh, one of our brother members, from the midst of his family and friends. Be it

Resolved, That the heart-felt sympathy of the Sigma Mu Beta Literary Society be extended to our bereaved brother and the relatives. Be it further

Resolved, That a copy of these resolutions be sent to the relatives of the deceased and that one be printed in the M. A. C. RECORD, and also that a copy be placed upon the society records.

From the
SIGMA MU BETA.

EASTER PROGRAM, M. A. C. SUNDAY SCHOOL.

Song, Hail Easter Day, No. 112.
Prayer.
Responsive Reading.
Coronation.
Repeat 23d Psalm.
Easter Offering.
Recitation, Welcome, Ethel Taft.
Children's Creed, Primary Class.
Carol, Mrs. Hedrick's Class.
Reading, Robert Holdsworth.
Song, Katharine Vedder.
Easter's Return, Mr. Loew's class.
Song, Welcome Spring, Primary class.
Recitation, Lawrence Longyear.
Music, Mrs. Hedrick's class.
Recitation, Easter Bells, Harold Bird.
Talk, What Easter Means to us, Miss Hopkins.
Sec.-Treas. Report.
Song, Christ The Lord is Risen, No. 113.
Close, saying the Lord's Prayer in concert.
Ninety-two persons were present. Preparations for Children's Day will soon begin.

MICHIGAN ACADEMY OF SCIENCE.

The tenth annual meeting of the above society was held in Ann Arbor last Thursday, Friday, and Saturday. The attendance was good in spite of the fact that the Michigan Schoolmasters' Club held its

session in Ypsilanti at the same time.

In the forestry section Dr. Beal explained 25 or 30 lantern views of seedlings and young forest trees. Chas. W. Garfield, '70, was to have read a paper on "The State's Work in Forestry," but was unavoidably detained. His paper was read by Dr. Clark of the U. S. Bureau of Forestry. Prof. Bogue, of the department of forestry at M. A. C., read an article on "Forestry Plantations in Michigan."

In the botanical section, F. A. Loew, M. A. C., '04, read an interesting article on the "Importance of Plant Variation and Its Bearing on the Evolution of Species." Dr. Beal had a paper explaining the scope of the "New Edition of the Michigan Flora." He gave an account of the new plants added and the general character of the work. Prof. Dandeno read an article on "The Relation of Mass Action and Physical Affinity to Toxicity of Solution." This brought out considerable discussion since this subject does not seem to have been investigated to any great extent. "Educational Requirements for the Profession of Forestry" was the subject of a ten-minute address by Prof. Bogue. Dr. Beal concluded the program with a description of "Extension Work in Agriculture."

M. A. C. was well represented in the sanitary science section. "Domestic Science in Its Relation to Sanitary Science," was the subject of a paper by Miss Lyford. Miss Carpenter read an article on "The Object of Cookery in the Schools." Dr. Marshall discussed the "Associative Action of Bacteria in the Souring of Milk." F. W. Robison was on the program for an article on "Iron and Fiber in their Relation to the food of man." Prof. Barrows was to give a talk on "The Birds of Michigan" in the ornithological section on Saturday but was prevented by illness. The discussions in the various sections were interesting. A disagreement was found at times. The question whether hybridization causes new species was discussed. Some claimed that it did and others that the question was still in the experimental stage and that no definite proof had yet been given.

T. F. Marston was to have read an article on pure milk production but could not attend. I. O. Johnson presented an interesting discussion of "The Significance and Production of Walker-Gordon Milk."

In the fish and game section, F. B. Dickerson, of Detroit, read an article on game fish. L. W. Watkins, '93, was unable to be present to discuss game birds.

Dr. A. C. Lane of Lansing was elected president. The vice presidents were elected as follows: Prof. Dandeno, M. A. C., botany; Prof. Jefferson of the Normal, geography and geology; Dr. Raymond Pearl, U. of M., zoology; Prof. Scherzer, Normal, science teaching; Dr. T. B. Cooley, U. of M., sanitary science, and Dr. Beal of the agricultural section. Dr. C. E. Marshall, M. A. C., is the new secretary-treasurer.

April 4th, 1904.

ORDERS II.

Companies A and B will receive their arms equipments on Wednesday, April 6th, from five to six p. m., and companies C and D on Thursday, April 7th, at the same hour.

Drills will be held on the parade ground on Tuesdays, Wednesdays, and Thursdays.

As the time allowed for drill is short, cadets will be required to report promptly with their companies at the hour designated for drill. All are required to attend their drills except those excused by proper authority, which must be in writing and sent to the adjutant's office previous to the drill hour.

The practice of cadets reporting to the adjutant when late is not the proper procedure. They should report to their 1st sergeant, who will send in the name of all such to the adjutant in order that such cases may be investigated.

Cadets are reminded that they are held responsible for the care of arms and equipments issued to them.

By order of MAJOR KELL.
G. N. CARDOZA,
1st Lieut. and Adj. Corps of Cadets.

With '85.

D. B. Waldo has been very successful as principal of the Northern State Normal School at Marquette. He is an organizer and a thorough educator. The state board of education recognizing these qualifications has elected Mr. Waldo to place the new normal at Kalamazoo on a firm basis. His work as principal at Kalamazoo will begin this fall.

'89.

Ray S. Baker had the misfortune to break his leg above the ankle last week. The accident occurred while replenishing the furnace fire. In some way he slipped with the result of a simple fracture of the fibula. He has traveled all over the U. S. and never met with the slightest accident.

With '90.

Austin F. Pettit is located at Clinesburg, Texas. He is a railroad tie contractor and controls stumpage over a 24,000-acre tract of land. He has five children and says that two of the boys will soon be ready for old M. A. C.

'91.

B. A. Holden has charge of the bureau of information of the State Grange. His office is in Lansing.

'00.

A. Knechtel, forester of the state of New York, visited at M. A. C. last Friday. He has charge of New York's forestry exhibit at St. Louis and expects to be there the entire summer.

'02.

A. E. Kocher is working for the United States Bureau of Soils, and is now located at Palestine, Texas. He has been assigned to the region of the "Holy but swampy land" for the remainder of the year. His work consists of soil analysis, surveying, map drawing and bulletin reports.

ALUMNI.

'01 and '03.

If of one thing more than another, Iron Mountain may boast with commendable pride of its schools, the buildings and equipment for work along all lines.

This is essentially true of the department of manual training, which department was opened in January of the present year. Although so short a time has elapsed, there is no question as to the wisdom of the board in this matter or as to the success which is to result from the work of this department.

The manual training department is housed in the Hulst's building, and is most thoroughly and completely equipped for good work, and is in charge of competent instructors who have devoted years of study in preparation for this work.

The department of mechanical drawing has eleven students, each of whom is doing good work.

Here are tables and a complete outfit of draughting instruments, supplied in part by the school board and partly by the students.

The work is in charge of S. Garthe, a graduate of the Michigan Agricultural College. He is intensely interested in the work, and imparts to his pupils not a little of his own interest and enthusiasm. The pupils take very kindly and readily to the work, and as stated, the difficulty is not to induce them to begin, but to put away their tools at the expiration of the hour.

Nor is this preparation for the education of heads and hands for the boys only. As great care and preparation has been made for the young ladies and if they are not well grounded in the principles of domestic science it will not be for want of opportunity, nor the fault of Miss A. M. Gunn, who is in charge of this department.

Miss Gunn is a graduate of the Michigan Agricultural College, and is untiring, zealous and indefatigable in her work, giving to it the best of a mind richly stored, a physique well developed and cared for, and a nature endowed with all the attributes of a womanly woman, whom her students honor and respect, and to whom they look and go for the help needed in their work.

In the department of domestic science, cooking, sewing and the care of the home are taught, not by precept only, but by practical application of the theories presented. In this department are pupils from the 7th, 8th, 9th and 10th grades.—*Iron Mountain Evening Gazette.*

'01.

Frank Bach is located at Schradler's Hotel, Braunschweig, Germany, 7 Gordelingerstrasse. He speaks of the customs of the people, especially in passing on the streets. It seems that the average German takes a straight course and has no rule for turning to the right or left. He has frequently had collisions. In England people turn towards the left.

THE M. A. C. RECORD.

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TUESDAY, APR. 5, 1904.

LABORATORY VS. SHOP.

The above is the subject of an article by W. S. Leonard, foreman of the machine shop at M. A. C., in *The American Machinist* of March 31, '04. There has been some discussion of the relative merits of laboratory and shop methods in engineering colleges. Mr. Leonard says: "It may be admitted that the laboratory method has some important advantages as compared with the workshop method. By the laboratory method we may select the best exercises and the tools best adapted to the work, and, by continual repetition, discover the best way of imparting the instruction, and, because the same exercises are executed over and over again, the work of the instructor is much easier. This circumstance makes it practicable to employ cheaper talent for the instructing. We may go a step farther and admit that if we have in view the narrow purpose of teaching the student how to chip and file, to do lathe work, planer work, milling, etc., in short, if we wish to teach mere tool manipulation, the laboratory method cannot be surpassed, but such a plan is more in accord with the object of the manual training schools. The engineering school should have a different object, or at least a wider scope to its shopwork. * * * My experience is that the pupil shows more enthusiasm in making some part of a machine. Most students are disappointed when they find that the details which they have shaped with so much care are finally to be remelted or thrown into the scrap heap. The moral effect is somewhat akin to that of kindergarten work. The student feels that he is being treated as a child and not as a man. * * *

Is it possible to combine most of the good features of the laboratory method with the shop method? Mr. Smith says no. In taking issue with him on this question I shall outline the plan we have endeavored to follow at M. A. C., including a brief reference to one of the classes in machine design. In this class we take up shop machinery chiefly, including lathes, planers,

milling machines, etc., and endeavor to conduct the work much as in a regular drafting office, making only such modifications as educational requirements necessitate. By lectures and typewritten matter the attention of the student is directed to those methods and regulations which have been found to give the best results in practice. He is also referred to discussions in technical journals relative to the machines being designed, and to articles on drawing-office systems. Sometimes the instructor reads to the class criticisms of technical graduates published in mechanical papers. The student thus learns what will be expected of him when thrown upon his own resources, and discovers the weak places in his armour which need to be strengthened.

It is the intention that each machine designed shall compare favorably with those built by manufacturers. Complete assembly and detail drawings are made and the students are given to understand that the machines are likely to be built in the shops. Generally some of the patterns are started within a few weeks (of ten class hours per week) after the designing is begun. If the patternmaker calls attention to any errors which have been overlooked in the designing room, the student responsible for such errors is sent to the pattern shop to investigate and make the necessary corrections. The methods of molding and machining difficult parts are considered and discussed, and the effort is made to design the whole machine with reference to the most economical construction. Under such conditions the work of both instructor and student is more thorough and exacting than it would be if there was no intention to build the machine. A feeling of interest and responsibility is also developed which would otherwise be impossible. * * * A mock battle can never furnish that high order of training and military spirit that is developed in actual warfare.

It has been our policy to employ the laboratory method in combination with the workshop method. As indicated above, we aim to build most of the machines designed by the class. As fast as the castings are made in the foundry they are given to the students to machine. We observe this precaution, however, that when a machine casting does not furnish the proper instruction, an exercise from the regular list is used instead. We have a carefully graded list of exercises on the laboratory plan; but whenever a machine detail furnishing approximately the same instruction is to be had, we give it to the student instead of the exercise. If a student is ready to make a square-thread screw and a similar screw is needed for a machine, the screw for the machine is made. If he is ready to make a spur gear and the machine drawings show such a gear, he works by the machine drawings instead of the exercise drawing, and so on. If, in addition to this work, the students are required to do the fitting, squaring and aligning necessary in assembling machines, they receive an important class of instruction for which, if I mistake not, Mr. Smith's laboratory method makes no provision. * * *

Let us sum up the advantages of the machine-shop course here advocated as compared with the laboratory method:

First. The machines to be

manufactured being designed and built in the college shop, the student comes in contact with the work in all its stages. Under such conditions he will get the training due to making the details the same as by the laboratory method, and in addition thereto, that other training which is perhaps more valuable, viz.: a knowledge of the function these details perform as parts of a complete machine.

Second. Knowing the functions of the various parts, the student will understand what parts of the work require special accuracy and what parts may be made with less expenditure of time. Every mechanic understands the advantage of such knowledge.

Third. The fact that the work has a commercial value enlists the student's interest and causes him to attach to it a degree of importance which, of itself, must increase the educational value of the work.

Fourth. If the shop-order and cost-keeping systems are used, the student gets another kind of training which is of value to the engineer.

To carry out the plan here outlined involves hard work on the part of those in immediate charge of the shop, and to make it successful necessitates a liberal expenditure of money for proper equipment. But the writer believes that such a system, or a near approach to it, is expected of universities, and that such work would be appreciated by the "captains of industry" to whom the technical graduate applies for employment.

DOMESTIC SCIENCE CHEMISTRY.

After analyzing meat, eggs, bread, breakfast foods and testing flour for strength, the class in domestic science chemistry went to Lansing on a visit of inspection, in order to become better acquainted with the methods of preparing the various foods to be found on the market.

The first factory to be examined was the condensed milk factory. Here we saw the milk as it entered, was condensed and canned. A portion of the factory is given entirely to the making of cans, the tops, bottoms, and sides of which are cut by machinery from sheets of tin. Before filling the cans are tested by a vacuum test. Sealing and labeling are also done by machines. The factory on an average puts out 50,000 cans daily and fills 40,000. One of the most noticeable things was the absolute cleanliness of the factory, the walls and pipes of which are all

painted white. We were urged to ask questions that the process might be thoroughly understood, but those things that interested us most were secret.

At Thoman's flour mill we found that the process of flour manufacture is comparatively simple. The wheat used is a mixture of spring and winter wheat. It is first passed through rollers to crush the kernels then the coarser part is sifted out and again crushed, coming through finer. This crushing and sifting is repeated till the flour has all been separated from the outer shell of the wheat which is sold as cattle feed.

After a short stay we left the dusty mill to learn how cook stoves are made. When Mr. Bement discovered that we were seniors he absolutely refused to show us through the shops until we had all promised that our cook stoves should be Palace Steel Ranges. The first that we saw of stoves was the molten iron pouring from the furnace. This bright metal is composed of pig iron, scrap iron and peat. As it comes from the furnace it is poured into forms, when sufficiently cool the stove pieces are taken from the forms, placed in a rattler to break off any lumps, then scrubbed and cleaned and finally polished on emery wheels made by covering steel wheels with felt, then coating with powdered emery. From here they are taken to the plating room and immersed in an ammonia solution of nickle sulfate, the iron acting as one pole and a bar of nickle as the other for the electric current. After an hour and a half the pieces are removed, washed and buffeted on felt wheels having whiting sprinkled over them. This completes the process as regards the individual pieces, now the stoves are set up as a test for the perfectness of these pieces and finally packed for shipping.

We next visited the Cut Glass Company. Here we saw the heavy pieces of glass cut first by coarse steel wheels then by finer ones and finally polished on wooden wheels. One can better appreciate the skill necessary in this work when he learns that the only markings are lines quartering the surface. All patterns are learned and put on by the eye. Here we came across more secrets this time, regarding the liquids used in polishing.

Perhaps the place that we expected to enjoy most was the cracker factory. We were there on "cracker" day and saw the dough rolled out on an endless belt and cut

(Continued on last page.)

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ABOUT THE CAMPUS.

Mrs. J. P. Bond of Leslie is visiting her daughter, Mrs. B. O. Long-year.

Reports from the South Haven and Upper Peninsula Stations will be published during April.

Pres. Snyder was elected president of the Michigan Schoolmasters' Club for the ensuing year.

Word comes to us that Hiram Carter, a member of the present sub-freshman class, died at his home in Armada, last Sunday morning.

Prof. C. D. Smith addressed a meeting of farmers at Rives Junction last Saturday. The attendance was large and much interest was manifested in M. A. C.

E. Boyer had the misfortune to break his collar bone last week while playing base ball. He was sliding for second base and collided with the baseman's knee. He is rapidly improving.

Forty-six years ago, thirty young men graduated at the U. of M. in what was then known as the classical course, with the degree of Bachelor of Arts. In 1900, thirty-three young men graduated with the same degree. In the meantime the number of students had increased from 450 to 3712. Greek and Latin are hardly keeping up with the times.

About 100 feet of the tunnel of the new heating system are finished. Some excavating has been done in the yard back of the horse barn. The work is progressing rather slowly. The ground is settling, quicksand is encountered and the force

has been reduced. By the middle of the month, more active operations will be instituted.

What might have proved a disastrous fire in Williams Hall was fortunately extinguished by students who saw it before it was too late. Some one had a candle burning on the table, left the room and in the meantime, the bookcase took fire. The flames nearly reached the ceiling. The book-case and several books were quite badly injured. This should be a warning to all to keep candles and other combustible matter in sight or, better still, out of the buildings.

The officers of the M. A. C. Alumni Association of Washington, D. C., are W. W. Tracy, '67, president; L. J. Briggs, '93, 1st vice president; A. F. Kinnan, '83, 2d vice president; L. S. Munson, '97, secretary and S. H. Fulton, '97, treasurer. The executive committee is considering the advisability of holding several meetings during the year or of arranging some plan by means of which the members of the association may get together occasionally for luncheon or for dinner.

M. L. Dean has secured additional space for horticultural exhibits at the St. Louis Exposition. This will give about 1500 sq. ft. for these exhibits from Michigan. North Dakota has more than twice as much, Missouri has an immense space, likewise Illinois, New York, California. C. P. Downey of Lansing has charge of this work for Michigan and has not been a decided success. Colorado has more space than Mich-

igan now has and does not claim to be a producer along this line. H. H. Smith of Ionia has charge of the detail work and has done about as much as Downey.

Of the 42 highest scholarships at Yale, 33 fell to students who are making their way through college.—Ex. This does not prove that working one's way is essential to success. It does show that the majority of those who "serve time" and are fed regularly, waste both time and money. Brains are not confined to students in poor circumstances, but the right use of them is not monopolized by the "grafters."

'99.

Fred R. Crane, who has charge of the department of farm mechanics, College of Agriculture, University of Illinois, was recently married to Mrs. Abbie Hunt of Urbana, Illinois. Congratulations.

'02.

J. M. Rankin visited at M. A. C. last Saturday. He will assist Prof. Taft in the inspection of orchards and nurseries during the summer.

At the Southeastern Stock Breeders' Convention held in Jacksonville, Fla., on March 22d and 23d, three M. A. C. alumni were present. They were Prof. C. M. Conner, '92, Agriculturist of the Florida Experiment Station, Lake City, Fla., who delivered an address on "Feeding Problems," Guy L. Stewart, '95, Industrial Agent for the Southern Railway Co., and M. A. Crosby, '02, U. S. Dept. of

Agriculture, who gave an address on "Winter Pastures and Forage Crops for the Southern States."

With '03.

A simple home wedding was solemnized at the home of Mrs. N. P. Bonney last Monday morning when her daughter, Alice J., was united with William M. Hallack. The ceremony which was performed at 6 o'clock a. m. by Rev. F. P. Sprague of the Congregational church, was witnessed by only the immediate relatives and a few friends of the bride and groom.

Immediately after the wedding those present sat down to a delightful wedding breakfast and after the meal the newly married couple left on the 6:49 train for Grand Rapids and other southern points where they have been visiting for several days, returning here last night.

Neither of the two most interested in the event needs an introduction to the people of this vicinity, the bride having been a resident here for nearly twelve years past, graduated from the local high school and has since taught for a number of years in the local and Frankfort schools. The groom has been identified with the community for the past two and a half years as editor and publisher of this paper.

We appreciate the many kind wishes which have been extended by our many friends and if those to whom the ceremony was a surprise will pardon us this time we will solemnly promise that it will not happen again.

Mr. Hallack is editor of *The Thompsonville News*.

DOMESTIC SCIENCE CHEMISTRY.

(Continued from page 2.)

into shape by an iron roller. From this belt it was taken upon a long wooden scoop and thrown on to the pans in the oven. The oven is a Ferris wheel affair consisting of twelve pans. The dough is placed on one pan at a time and with one revolution hot crackers nicely crisped are pushed into baskets and carried away to be cooled. Cookies are also manufactured at this factory, but only every two days. We did not see them in the process of making but were allowed to test several kinds. Vanilla wafers, cocoanut wafers, spiced wafers, fig newtons, marshmallow walnuts, who would ever tire of these, surely the members of Club C would not.

The last place inspected was the Pure Food Company. Here we learned some of the methods used in adulterating foods.

The whole trip was interesting and helped us to a good bit of useful knowledge. A. P.

A FEW WORDS CONCERNING THE NEW MICHIGAN FLORA.

BY W. J. BEAL.

The last edition by Beal and Wheeler was printed in 1892. The edition of which I now speak is now in press and will form a portion of the fifth report of the Michigan Academy of Science. The sequence of families in former Michigan Floras followed *Gray's Manual* which is essentially that of Auguste Pyrame De Candolle. Most of the reasons given for that arrangement have long since been considered untenable. In the present edition of the Michigan Flora, I have followed *Britton's Manual of the Flora of the Northern States and Canada*, published in April, 1901. In following Britton, I mean to say that I have adopted the nomenclature there used, the sequence of families and genera. The sequence of families is nearly the same as that of Engler and Prantl. I have arranged the species of each genus in alphabetical order. In following the nomenclature of Britton as found in the *Manual*, I do not by any means say that I approve of all the innovations there made by Nash, Rydberg and others. Some author must be followed and I have selected the one, all things considered, that I believe to be best.

The bibliography has been considerably extended.

The species and varieties of Pteridophytes number 100, the Gymnosperms, 15, the Monocotyledons, 638, the Dicotyledons, 1474.

There are in Michigan so far as known species and varieties of trees, 85, species and varieties of shrubs, 209. This edition of the flora enumerates species and varieties, all told, 2227, the former edition contained species, 1746. Addition in the present edition, 481.

Judging from the time I have devoted to this revision, and the mistakes made, I am convinced that I was not very well suited to the work. The preparation of the manuscript has been a great time consumer. The nomenclature has been much changed; the arrangement has been turned end for end and then shaken up liberally; lists of

plants of ten other botanists have been incorporated, and in one case, one person furnished three or four separate lists.

Professor C. A. Davis in a recent letter has well pointed out some of the difficulties that the systematic botanist labors under in his attempt to find the correct name to each species in our flora.

He writes, "This making a new edition of a Manual of Botany simply that a lot of new names may be published every five years is certainly most exasperating and wearing. We now have Sargent, Britton, Sudworth (for Bureau of Forestry people) and Gray, to say nothing of Britton and Brown, and some of the names of our trees are different in all five. It makes it interesting for those who want to use all these works doesn't it?"

After all that has been said and done, the study of the flora of the state, at best, can only be considered as fairly begun. By far the greater areas have not yet been seen by any systematic botanist and very few regions have been visited by one who is an expert in some one or more difficult families.

What species flourished in large areas will never be fully known, since man has cut off, burned over and plowed under tens of thousands of acres of the virgin wilderness! Swamps, marshes and lakes have been drained and the land occupied by farm crops. Chiefly through the agency of man, great numbers of weeds and other plants have been introduced from other states and from foreign countries and each has begun a vigorous warfare for all the room it can get.

Whoever prepares the next edition of the Michigan Flora will find a large number of acquisitions. Some new species, or supposed new species, will be described, foreign acquisitions may be expected from all directions.

With G. V. Nash let loose among the grasses of the country, E. P. Bicknell finding a plenty of new species of *Sisyrinchium*, E. L. Greene making hosts of new species of *Antennaria* and many other genera, W. W. Ashe finding no end of new species of *Cratægus*, there is no telling where the increase of species to our flora shall end. Besides these men, P. A. Rydberg and others of his type see fit to meddle with any family or genus they may select. Behold Rydberg's work in the *Rosaceæ* and *Orchidaceæ*! He has made seven genera out of one genus, *Habenaria*, not to mention numerous other changes in the same family. Why say more? You may soon see the revised flora and a long list of names of botanists who have assisted in its preparation.



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