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Summer, 1958

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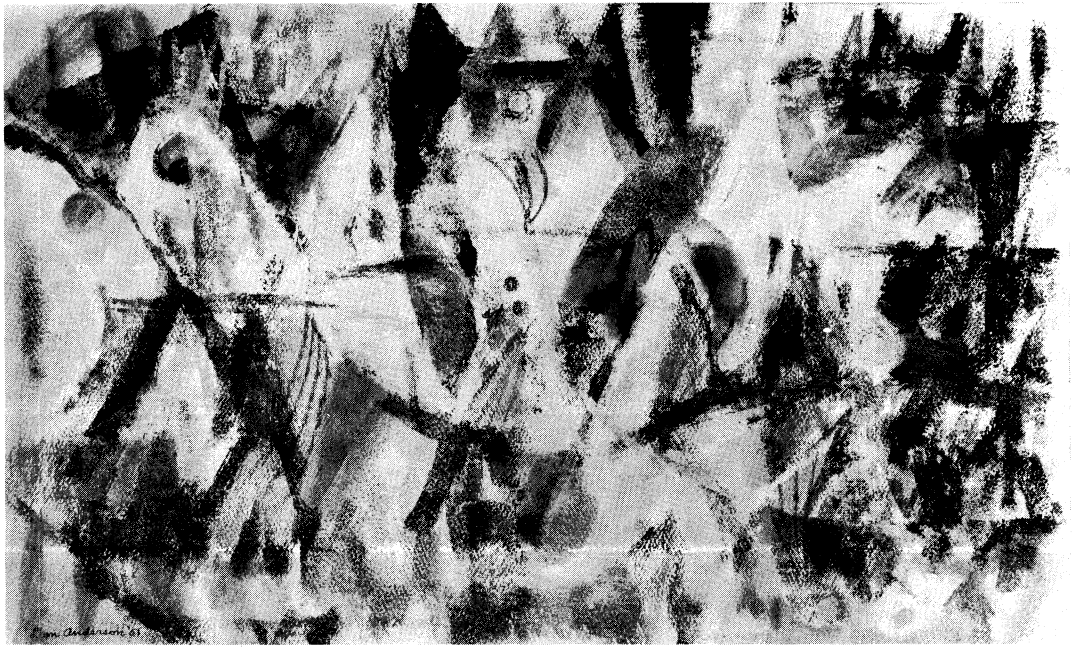

Butterflies and Moths

Donald M. Anderson

WISCONSIN ACADEMY REVIEW
Vol. 5 Summer, 1958 No. 3

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WISCONSIN ACADEMY REVIEW

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WOODLAND'S MUSE AND MUSIC

By S. A. Wilde
Department of Soils, Univ. of Wisconsin

"In the forest is enchantment
which expresses everything."

Ludwig van Beethoven

Rush of wind, splash of water, rustle of foliage, buzz of insects, and songs of birds have given rise to fragmental musical sentences. These in time have been combined into melodies, chords, and counterpoint, constituting the symphonic music of today. As related by Davenport (1932), the melodic designs of the feather-clad minstrels occasionally were imprinted in musical works with an exactness that bewildered the composer:

> "One day Mozart was passing a pet shop and would have gone by when he stopped transfixed by the singing of a bird....He blinked, cocked his head toward the shop door, stared blankly. It is not possible! But the bird was singing the Allegretto theme from his G major concerto, written a few weeks before. Wolfgang drew a long breath and dashed into the shop.
>
> "'Where is this bird?' he cried. 'Am I crazy?'
>
> "The proprietor took down a cage, its occupant a starling. Mozart counted thirty-four kreutzers, seized the cage and rushed home.
>
> "The Vogel-Stahrl survived and was entered in the 'account-book.' Under its price Mozart wrote its song, identical, but for the G sharp and the grace-notes, with the first five measures of his Allegretto."

As witnessed by the diaries, letters and incidental remarks of many celebrated composers, the forest in all its complexity of life and sounds has been an important source of musical inspiration.

Beethoven once declared that he loved a tree more than a man. According to Schauffler (1933):

> "Even if his music did not proclaim his passion for the open, one could infer it from his sketch books, where, scrawled among the staves, one finds

* - Presented at Academy's 88th Annual Meeting, Whitewater, May 3, 1958 (slightly revised)

such ejaculations as: 'It is as though, out in the country, every tree said to me: "Holy, holy..."' Each summer he spent as much time as he could manage in the unspoiled woods of the suburbs. There, rain or shine, he would wander composing, or lie on the soaked ground, too absorbed to notice that he was cold or wet....Through the woods and meadows he stormed, waving his arms, shouting and singing at the top of a none too agreeable voice. The peasants looked upon him as crazy, and the very beasts of burden often took fright at the apparition."

At another time Beethoven wrote to a friend:

"No man can love the country more than I do, for the woods and trees and rocks return the echo a man's heart desires. In the forest is enchantment which expresses everything...Almighty, every tree has a voice through Thee. What glory in such woodland place...."

Those few bright days which were to be found in the short span of Schubert's life were spent in the forests of his native Austria. And Schubert gratefully acknowledged the hospitality of the green kingdom in his numerous musical scores. With astonishing expressiveness, the songs of Schubert describe two very different ecological types of forest--the peaceful nature of hardwood stands in the Danube Valley and the wild environment of the deep woods of the Tyrol Mountains. Schubert's picture of a mad ride through the dominion of the wood-demon, the "Erlking," appears to be a nucleus from which Moussorgsky developed the whole school of modern realistic music.

Mr. Weber, the Chicago musical critic, pronounced once that "He who does not like Schubert, simply does not like music..." The secret of the universal recognition of Schubert's music lies in its organic fusion with nature; its truthfulness in expressing the magnificent power and charm of the wilderness.

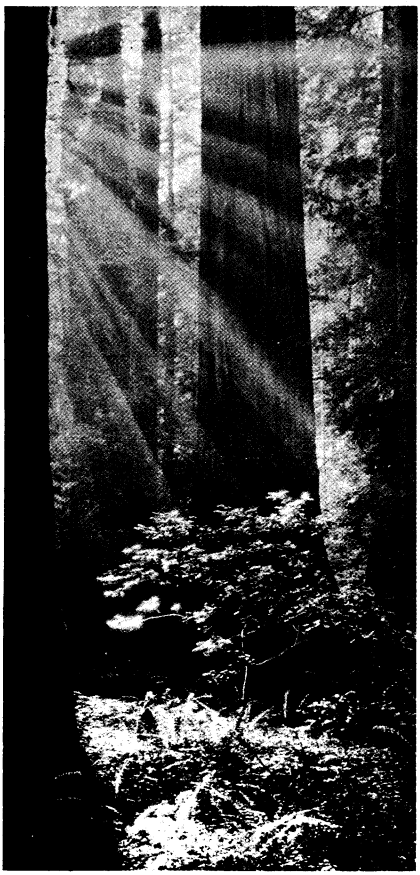
There are few tone-paintings comparable in brilliancy to Liszt's "Forest Murmurs," a piano study which dresses the chaotic symphony of nature into a robe of sparkling beauty.

Regarding the combination of the two opposing rhythms of Chopin's F minor study, Kullak writes:

"If one will, he may also betake himself in fancy to a still, green, dusky forest, and listen in profound solitude to the mysterious rustling and whispering of the foliage. What, indeed, despite the algebraic character of the tone-language, may not a lively fancy conjure out of, or, rather, into this etude!"

Rimsky-Korsakoff (1935) gives the following account of his environment at the time of the creation of "Snow Maiden," the opera which he considered his masterpiece:

> "Everything was somehow in peculiar harmony with my pantheistic frame of mind at the time and with my passion for the subject of the Snow Maiden. Thick crooked knot or stump overgrown with moss, appeared to me the wood-demon or his abode; the forest 'Wolf-Wood'--an enchanted forest; the triple echo heard from our balcony--seemed the voices of wood spirits or other supernatural beings...I composed every day and all day. Musical thoughts pursued me persistently. There was a piano, old, broken, and tuned a whole tone too low. I used to call it 'Piano in B flat'; nevertheless, I contrived to extemporize on it and try out what I had composed. My fancy tended to outstrip the rapidity with which I wrote the score...No previous composition had ever come to me with such ease and rapidity as Snow Maiden."



Rachmaninoff tells in a characteristic way of his manner of composition:

> "...My composing is done slowly. I go for a long walk in the country. My eye catches the sharp sparks of light on fresh foliage after showers; my ear the rustling undernote of the woods. I watch the pale tints of the sky over the horizon after sundown, and they come; all voices at once..."

Olin Downes (1918) gives the following description of MacDowell's work:

> "Returning from Germany to America in 1888, MacDowell soon fled from the din of the cities and found refuge in his log cabin in the woods of New Hampshire. There, in communion with the forest that

he loved, he composed much of his best music. He would not cut down a tree for he was certain that the spirit which it harbored suffered from the ax."

In appraising the compositions of MacDowell, Gilman (1906) states:

"His music is redolent of the breath and odour of woodland places, of lanes and moors, and gardens..."

He writes about "Haunted Forest," "Forest Spirits," Forest Idyls" and "Woodland Sketches" (Op. 42, 19, 51).

In recent years, we the people of Wisconsin have had a chance to observe the rebirth of our forests through annual plantings of more than 50 million trees. Most of us regard this effort in the light of an increased supply of lumber and pulpwood, additional nesting grounds for ruffed grouse, or sites for new resorts. But, who knows, maybe the noise of the motor-driven tree planting machines is a prelude to songs, sonatas, and symphonies which will outlive many generations of timber, partridges, and resorts. On a purely statistical basis, the output of music of lasting value is overwhelmingly in favor of the countries that possess forest cover.

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# # #

NEWS ABOUT THE STATE COLLEGES - EUGENE R. McPHEE, Director of the state colleges, in his annual report to the Regents in July, stated: 1) College enrollment has doubled since 1952 and in September they will welcome well over 13,000 students to the nine campuses. Freshman enrollments are running almost one-third ahead of last year and a freshman class of 5,500 is expected. 2) There are 900 more students on campus for the summer than in 1957. 3) All except three of last year's teacher-graduates were placed in teaching jobs at an average salary for men of $4,029 and for women $3,663. 4) Teachers have been added to the college faculties at an average rate of 47 a year since 1953. There are now 814 teachers at the 10 colleges. 5) Nine new academic majors were added during the year and 15 the year before. Graduate work in education at the masters' degree level is planned.

# # #

WISCONSIN'S CHANGED ATTITUDE TOWARD INDUSTRY

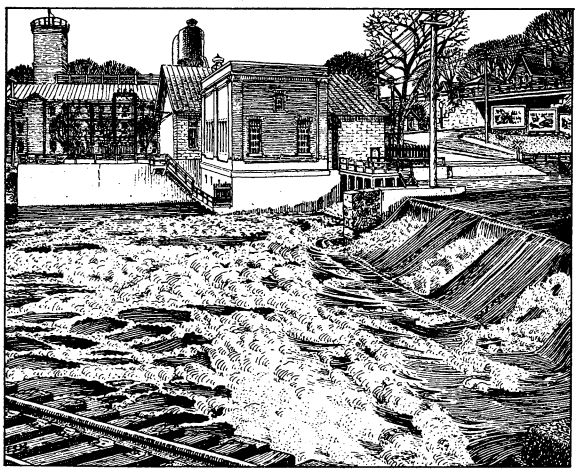
By R. J. Colbert, Director
Bureau of Community Development
UW Extension Division

Wisconsin's history covers several fairly distinct economic eras, each marked by a shift in the major source of income in the state. Each era not only gave rise to important industries that served its needs, but also developed public and political attitudes favorable to it. First, lead and zinc mining was dominant; then wheat farming; then, with the extension of the railroads, lumbering took the lead; then, with the depletion of the forests, dairy farming took first place; finally, the growth and spread of industry put Wisconsin in the list of important industrial states.

The Industrial Era Opens

Though farming and dairying will continue to be important in the state's economy, they are no longer the major source of income and prosperity. Since World War II, manufacturing has moved up into first place. It now outranks agriculture more than two to one--in 1950 only 254,186 were employed in Wisconsin agriculture while 414,643, including 21,690 living on farms, were employed in manufacturing. A year later employment in manufacturing increased 44,828 while the number on farms decreased.

Unlike previous economic eras, the new era was not ushered in with favorable public interest and encouragement. Indeed, it started in the face of negative, even



Rock river dam
at Janesville

by
Frank S. Moulton

in
"Southern Wisconsin Through the Windshield"
(The Second Yearbook) C

(by permission)

hostile public and political attitudes. Election after election major appeals for votes were made to farmers and to organized labor. Business and industry, especially the corporation and "big business," were suspect, and railroads and power companies were political whipping boys. The University was prohibited from accepting grants from business or industrial sources on the assumption that such funds were "ill-gotten gains," tainted, and seeking to corrupt. State policies of taxation and public administration had earned a nation-wide reputation as being anti-business and unfavorable to industrial growth. Here and there local communities recognized the need for more jobs for more people, and some made frantic, even ill-advised, efforts to attract industries. However, there was no state agency to extend help or counsel to them. Thus, it is alleged that the movement of industry and labor to other states was the result of these negative attitudes.

The Start of a Changed Attitude

The real change in public and political attitude toward industry started during World War II with the program of the Committee for Economic Development in which the University cooperated. (See "A Demonstration of Foresight and Faith," a report of the accomplishments of the C.E.D., by R. J. Colbert, Madison, 1946). Practically every community in the state had its local C.E.D. committee to study and organize its employment potential and to be ready with assured jobs for their returned servicemen. Thus, Wisconsin was ready for peace-time operations without experiencing a period of unemployment. Furthermore, in the process, the local communities gained a wholesome respect for the major source of jobs--industry.

When the C.E.D. discontinued its field services in 1946, many communities wanted to continue their programs. In response to this widespread interest, the Bureau of Community Development was created in the University Extension Division. For a number of years, the Bureau placed major emphasis on industrial development, especially in the smaller communities and in the counties that were losing population. Sound policies and practices of self-help were studied and followed. Since farm areas were losing population most rapidly, the farmers themselves began to see the importance of local industries to provide jobs for workers who no longer were needed on the mechanized farms, and to share the growing tax burden.

The local industrial development corporation proved the most effective means for getting results--of acquiring factory sites, constructing plants for sale or rent, and for negotiating with companies seeking locations. The number of these corporations grew rapidly. (There were perhaps 10 when the program started in 1946 and approxi-

mately 170 in May, 1958. See Fine, I. V., Industrial Development Corporations in Wisconsin, University of Wisconsin School of Commerce, Madison, 1958). Many have been successful in attracting or creating industries and have contributed much to a better understanding of the importance of manufacturing in the local economy. Thus, the changed attitude toward industry got its start at Wisconsin's "grass roots."

Since 1953, further evidence of changing attitude has been the designation by most county boards of industrial development committees. These committees study industrial potential, select factory sites, and arrange appropriate industrial zoning regulations. Observing this accelerated local interest, the 1953 Session of the Legislature created an interim committee to study the need for a state agency to promote Wisconsin's industrial development on a statewide basis. On its recommendation, the 1955 Session created the Division of Industrial Development in the Governor's office. The 1955 Session also authorized the creation of a State Development Credit Corporation to provide more adequate credit facilities for local industries. These two acts constitute further realistic evidence of a changed attitude of State Government toward industry.

Also, in 1955, the Bureau of Community Development arranged the first state-wide conference on industrial development. The discussions and exchange of experience and ideas helped community leaders see more clearly the value of industrial development. Three subsequent statewide conferences have been held under the auspices of the Governor and each has revealed an increasing understanding and appreciation of the role of industry in Wisconsin's economy.

The railroads, power companies, and natural gas pipeline companies serving Wisconsin have become increasingly active in community industrial development.

These are signposts of Wisconsin's changed attitude toward industry.

# # #

ACKNOWLEDGMENTS - For materials not acknowledged elsewhere: Sketch (p.97) by Will Vawter, Riley's "Songs O'Cheer"(1905); photo (p.99) from "Forest and Flame in the Bible"--Govt.Prtg. Office; sketch (p.114) from "What's New in Farm Science"--UW Bull.498; sketch (p.117) by W.C. Schafer in Wis. Alumnus, Nov.15,'56 with permission; sketches by Charles W. Schwartz of Mo.Cons.Comm. (pp.107,116,122 and 126); photo (p.134) UW News Service; photos (on cover and p.118)UW Photo Lab.; photo (p.119) from copyrighted Milwaukee Journal with permission; photos from Wis.Cons.Dept. (pp.123 and 135) and photos (p.128) from State College Bd. of Regents.

MATHEMATICAL PROBLEMS IN YOUR LIFE

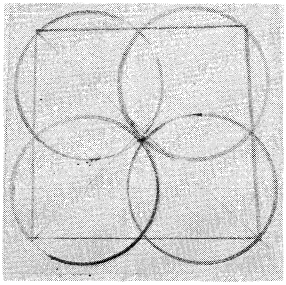
By P. C. Hammer, Director
UW Numerical Analysis Laboratory

Most college graduates and even most Ph.D's have the impression that the stream of new mathematics has reduced to a meager trickle. Now, while mathematics has "dried up" to the average taste, nevertheless about 50 weighty volumes of mathematical researches are published each year. With such a flow you might think that little will soon be left to be done. Your courses in mathematics have probably indicated to a very limited extent the nearby and extensive boundaries of the unknown, and the kinds of problems with which mathematicians occupy themselves.

It is true that many problems depend for a reasonable length explanation on a rather extensive technical background. On the other hand, there are mathematically formulatable problems which have not been solved in any realistic sense, mathematically, but which confront you regularly. For example, you probably have had to solve some kinds of packing problems even if you didn't do it mathematically. If you are able to solve the same problem mathematically, you might be acclaimed a mathematical genius. Now it is my purpose to illustrate a few of the classes of unsolved mathematical problems by those which I will term the packing problem, (including the tailor's problem) and the patching problems. They are all problems involving maxima or minima and they have not been solved in any but a few special cases.

1. The packing problem. (For dishes, for apples, for molecules). Given one box and a set of cups and saucers, what is the largest number of cup and saucer pairs which can be placed in the box? This kind of problem is so difficult that it has been solved mathematically only for very special cases such as the one in which every object is a sphere of the same size. Yet, every person packing objects in a limited space has to "solve" this problem, and usually a much worse one, due to the variety of objects to be packed. (During July and August millions of people will prove their fundamental mathematical ability by packing seemingly impossible numbers of objects into the luggage compartments of their cars). Conversely, what is the smallest box to hold the items to be packed?

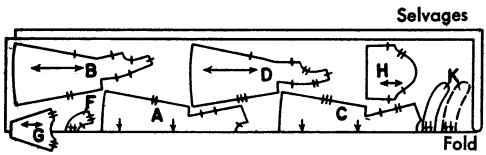
2. The patching or covering problems. These problems may be illustrated by finding the smallest diameter of circular patches such that, say, five of them will cover a square area. In doing this it will probably be necessary



also to locate the centers of the circles in the square. For four patches the problem is readily solved as the accompanying figure indicates. For five the problem is more difficult. If we allow each circle to have its own diameter and ask for the smallest total area of five circles to cover the square we have an even more difficult problem.

While these problems may sound like mathematical games they actually have applications. For example, the centers of the five circles in one sense form the most representative set of five points in a square, and could be used for locations of fire stations, for supply depots, or for places to test drill for soil samples in a square field. Much more difficult applications arise when attempts are made to optimally locate machinery in a factory.

3. The tailor's problem. (Carpenter, sheet metal worker, home dressmaker). This is again a packing problem, but in the plane. That is, given the pattern of a dress, what is the smallest number of yards of cloth from which the pieces may be cut? And how should they be cut? This is a mathematical problem of great difficulty and has been solved from a practical standpoint, in trivial cases only. You can visualize other applications; for example, what is the maximum number of cookies from a given spread of dough with one or several cookie cutters? This problem is also important in sheet metal work.



In these few illustrations we have indicated problems of mathematics which still resist solution. All of these can be readily understood with little mathematical knowledge.

# # #

CHECK YOUR CALENDAR FOR THE NEXT ANNUAL MEETING
WISCONSIN STATE COLLEGE, PLATTEVILLE
FEATURING THE DRIFTLESS AREA OF WISCONSIN
MAY 2-3, 1959

(Reproduced by Litho Productions, Inc., Madison)

SUGARING FOR MOTHS

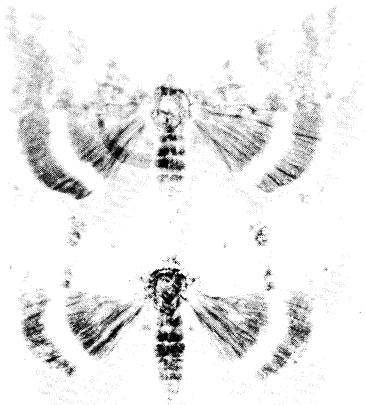
By William E. Sieker
Madison, Wisconsin

If you want to spend a unique and fascinating mid-summer evening in the woods, try collecting moths by the method known as "sugaring."

This method of attracting moths is accomplished with a bait made of a mixture of beer and corn syrup. Two bottles of beer mixed with two cans of syrup in a gallon jug make a very good bait of the proper consistency. This bait painted on tree trunks and fence posts along the edge of woods or along a path through open woods before sundown will attract many moths after the sun has set. Take a head lamp, a butterfly net, and a collecting bottle, and you are ready for your excursion.

Of particular interest are the Underwing moths that abound in Wisconsin woodlands. They are known scientifically as the Catocalas. Spectacularly beautiful, they range in size from one to nearly four inches in wingspread. Their forewings are gray or brown, or a combination of both colors; their hindwings are gloriously banded with red, yellow, orange, cerise, and jet black. One species has pure white wings with black bands and markings. In Europe and Asia a species occurs that has blue hindwings.

These moths are attracted by the fermenting smell of the beer. Cider vinegar can sometimes be substituted for beer, but does not work quite as well. The moths rest on the tree trunks sipping the sweet fermenting mixture. The longer they rest there, the more oblivious they become to the approach of a collector and are not as easily frightened away. Certain species seem much more restless and difficult to approach than others. Those who overstay their visit, finally tumble to the ground. I have taken as many as 65 Underwing moths in a single evening. But it is more usual to take a dozen to 30 specimens.

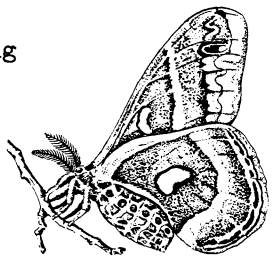


Underwing Moths

About 35 or more species of this genus of moths are found in Wisconsin. Their distribution depends entirely upon the location of plants upon which the larva feed. Those species that prefer universally distributed trees and shrubs are found throughout the state, particularly those that use the oaks, willows, basswood, and poplar. In the northern part of the state are found the species preferring white birch while those feeding upon the hickories and hawthorns are more common in the southern part of the state.

Some species feed upon trees or bushes which are very restricted in their distribution. Several of these feed upon the leaves of the Lead Plant known as Amorpha fruticosa Linn., which is found almost exclusively along the banks of the major rivers of Central United States. These plants are abundant at Ferry Bluff in Sauk County about five miles due west of Sauk City, and about 30 miles west of Madison. A good all-weather road leads to the base of these bluffs which tower about 200 feet above the Wisconsin river. In the days before bridges, a ferry plied between Dane County and Sauk County at this point. It is a beautiful wooded spot, a haven for wildlife. Animals and birds are abundant in the woods and fish in the river. The bank of the river is brightened by the cardinal flower that grows profusely here.

It is at this spot that the rare species of the Amorpha feeding Underwing moths are found. Of the four species which occur in the United States, I have taken three at this place by this method of collecting. They are understandably uncommon and a real prize for the collector who desires unusual species for his collection.



Amestris is the most common and largest of the three, having bluish grey forewings and yellow hind wings. The larva of this species also feed upon Locust (Robinia), and hence has a wider distribution. Nuptialis and abbreviatella come sparingly to the bait, particularly the latter species which has not been taken by many collectors. It is exceedingly rare and a great prize. The moth is very beautiful. The forewings are a warm brown color, with bright yellow hindwings, crossed with two black bands. The fourth species called whitneyi has never been taken there as yet. Some day, I am sure I will add it to my collection.

A number of species of another group of moths can be taken in lesser numbers by sugaring. They are the Sphinx or Hawkmoths, also known as the Hummingbird moths. A

number of years ago, I took a single specimen of the Hydrangea Sphinx (Darapsa versicolor) at this spot at Ferry Bluff, the only record of this species in Wisconsin. The larva feed upon Button Bush (Cephalanthus occidentalis). A more common visitor is the vine-feeding Hog Sphinx (Darapsa myron). There are about 40 species of this family in Wisconsin, all of which are in my collection.

# # #

RECOGNITION FOR AN OUTSTANDING TEACHER

Reproduced here is the congratulatory message received by SISTER MARY LAURETTA of Columbus High School, Marshfield last spring. The hometown newspaper, Marhsfield News-Herald, commented editorially at the time: "As long as America's schools contain such teachers, we need have little fear that the nation will lack for scientists to keep it in the forefront of progressive peoples."

- -

Sister Mary Lauretta looking over dye samples in Jane Karau's project

THE WHITE HOUSE
WASHINGTON

February 26, 1958

Dear Sister Mary Lauretta:

Through Congressman Melvin R. Laird, I have learned that the Columbus High School has placed four consecutive winners in the National Science Talent Search.

This is an unusual distinction for your school -- the talent of its students and the ability of its faculty -- but I am told that in this field you are deserving of special credit. Your outstanding guidance and teaching have done much to arouse your students' interest in science and to inspire them to superb heights of achievement.

It is a pleasure to send congratulations to you and to the Columbus High School.

Sincerely,

Dwight D. Eisenhower

Sister Mary Lauretta
Columbus High School
Marshfield, Wisconsin

TEACHER EDUCATION IN WISCONSIN

By Cyril C. O'Brien
Dept. of Education, Marquette University

The literature today is replete with articles lamenting the condition of education. The State of Wisconsin has not been immune to the prevalent concern. It has set a stance to meet its critics for a proportionate responsibility of the alleged deficiency. Professional Education is receiving the brunt of a barrage of verbiage with teacher education singled out for trenchant comment. Yet, the training of teachers represents only one combination of variables amid a host of others operating for the fulfillment of the best in education.

At least two years before the first Sputnik began to spin in its orbit, a new look, curriculum-wise, appeared in some State Teachers' Colleges. Primarily equipped for the training of elementary and secondary school teachers of the state with emphasis upon methodology, these Colleges began to experience a trend towards more content-consciousness. Existing courses were strengthened and new ones added along lines of the liberal arts tradition.

Co-existent with the preceding trend a clamor arose for more professional courses in Education to up-grade the requirements for state licenses especially at elementary level. This move came at a time when the state was witnessing a serious shortage of grade school teachers. Wisconsin normally requires for college students a minimum of 18 and 26 semester hours of professional preparation for secondary and elementary school licenses respectively.

There is a perennial pull between segments of professional education and adherents of the traditional emphasis upon the liberal arts curriculum. Both camps have their zealots. The former believe that the mere accretion of semester hours in Education will make one more educated. The latter are of the opinion that acquired skill and knowledge instinctively entail the competency to impart such acquisitions. Wisconsin has need of more teachers who have both quality of learning and are adequately prepared in professional courses.

Our state is singularly fortunate in possessing a variety of institutions devoted to the training of teachers. Besides the state-supported halls of learning,

there is a fine array of privately controlled liberal arts colleges dedicated to maintaining high standards of culture and scholarship. These act as a moderating influence on any college that tends to set up a curriculum solely in terms of a vocational education narrowly conceived.

High on the list of teacher education factors in Wisconsin is the supply-demand issue. A great shortage of elementary school teachers still exists in both urban and rural areas. Recent college graduates find difficulty in being placed in top paying urban and suburban centers unless their teaching majors are in demand as in the case of mathematics and natural sciences. There is a surplus of high school teachers with social science majors.

Comparatively little is being done for the gifted child (140 I.Q. and higher). Such require attention by specially trained teachers. Despite sporadic attempts here and there to offer a more challenging curriculum to promising grade school and gifted adolescent Wisconsinites, the current popular attitude is expressed in such manner as, "The bright will get along anyway," "Why waste public funds?" Training for teachers of the orthopedic, blind, and mentally retarded draws sympathetic approval. Training programs for education of the gifted receive scant support with resultant loss to state and nation.

The Wisconsin Academy has consistently encouraged the development of talents among our teen-agers, particularly in the natural sciences. Scholarships for outstanding achievement with public acknowledgment of science teachers in service have been incentives that have stimulated teacher education in Wisconsin long before the eye-opening satellite appeared on our educational horizon.

# # #

DUTCH ELM DISEASE REPORT

The Wisconsin Dept. of Agriculture Dutch Elm Disease Laboratory as of July 20 has diagnosed about 700 cases to date this year as compared with 376 and 63 cases for the two previous years respectively since this disease was discovered in Wisconsin three years ago. Fortunately, it still is located only in Southeastern counties, but these were increased to nine with new cases near Mequon in Ozaukee Co. and south of Brodhead in Green Co. Although Milwaukee Co. had 105 cases this year, the city of Beloit suffered most with over 160 cases and the adjacent township had 40 cases. This is not the final report for 1958 as more infected trees still are being found.

---George E. Hafstad, Plant pathologist

FEDERAL ASSISTANCE FOR TEACHING-RESEARCH PROGRAM IN RADIOBIOLOGY

By La Verne L. Curry
Dept. of Biology
Central Michigan College, Mt. Pleasant

The general interest in higher education poses several major problems which confront the administrator in colleges and universities throughout the United States. Increased enrollment, lack of equipment and instructional space are indicative of the larger numbers of students the institutions of higher learning will have to serve. The various instructional departments at Central Michigan College have experienced similar problems.

It became evident during the past several years that the modern technological methods would not become available to the average student of science without outside help. In addition, if history were to repeat itself, one of the last educational centers to receive help would be the teacher training institution. However, assistance in the form of a research and teaching grant through the auspices of the Atomic Energy Commission has now made equipment available at Central Michigan College for instructional purposes.

Originally the objectives of the research program were to conduct a series of studies on the ecology, rearing and taxonomy of aquatic insects called midges. During the first year of the investigation three students were employed. Student training followed the objectives of the program, namely, collecting, rearing and identification of the midge larvae. As the study progressed additional students were employed to replace the seniors lost at graduation. They were trained in microscopy and drawing of anatomical parts used in taxonomy, mounting study specimens, museum work, insect ecology and larval feeding studies. Some phases of these studies have appeared in the literature.

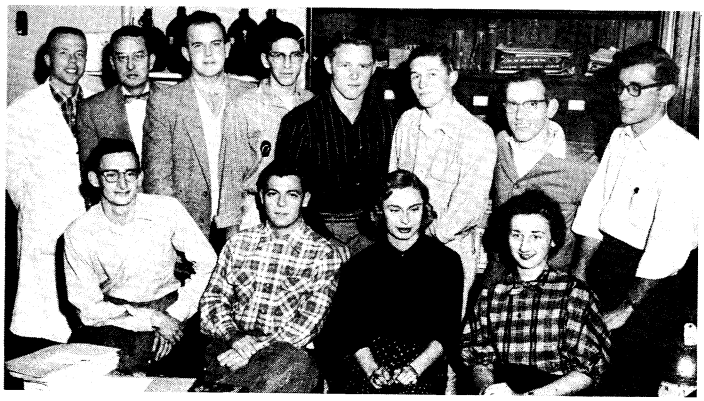
At the present time the research program has developed into one of student training. The area of study has now extended to an investigation of the P-32 uptake with regard to specific aquatic midges. In this program one student is conducting research related to the anatomy of a local form of a midge called Xenochironomus festivus. Cultures of living larvae in specified dilutions of radioactive phosphorus are involved and to enable the investigator to trace the P-32 in the organism, autoradiographic plates are used. In this manner "self-portraits" of the sections of the midge are obtained and concentrations of the radioactive phosphorus observed in the larval section.

A second student is translating French documents into English. These data will be incorporated into species descriptions as associated with larval keys. In addition, the student is also specializing in the taxonomy of specific groups of midge larvae.

Since the fall of 1957 a Radiobiology Seminar has been offered to majors and minors in the Biology Department. This course is offered each semester, each course giving one semester hour credit. During the first semester the student is introduced to the operation and application of Geiger-Müller, proportional and scintillation electronic systems to biological problems. Visual aids and discussion by a physics instructor help to clear up some of the basic problems in electronics. To complete the semester the student gives an oral report based on library and laboratory work.

The second semester student selects a problem which is conducted in the laboratory. Instructors assist students on questions evolving from their specific problems and students are encouraged to master laboratory methods and operation of electronic equipment. In this manner basic physical, chemical and mathematical knowledge is applied to biological problems.

A new course called Radiology is to be offered during the fall semester of 1958, in which four semester hours credit may be earned. The teaching staff consists of four instructors representing the college Mathematics, Physics, Chemistry and Biology departments. It is tailored to meet the science requirements of the liberal arts student. The course is divided into four areas of study, namely, mathematics, physics, the application of atomic physics to chemistry and biology and health physics. This class will



Radiobiology Seminar, Fall 1957

consist of two 2-hour laboratory periods and one 2-hour lecture period per week. Professional men from the central Michigan area are to be invited to lecture to the group whenever their particular work will be applicable to the program.

At the present time an accredited class is being organized for the Civil Defense Program. This course will be available to science students who have elected one of several teaching curricula at the college.

# # #

NEW MAP OF NORTH CENTRAL REGION MAJOR SOILS

By Francis D. Hole, Soils Dept., UW
(Supervisor, N.C. Regional Soil Map Project)

In 1957, the Soil Survey Committee of the North Central Region, representing 12 states from North Dakota to Missouri and Ohio, completed a new colored soil map of this area of extraordinarily fertile soils. The 12 Universities provided funds for printing the map. A soils bulletin to accompany the map is now ready for publication. By December 1958 copies of the map and bulletin will be available to the public for the price of $1.00, from the Soil Survey Division at the University of Wisconsin, and other state soil surveys in the Region.

The soil map measures three feet across and shows by means of colors and symbols the broad soil groups in the "prairie triangle," which has its base on the west and its point just south of Chicago. The forest soils to the east of the prairie triangle are light brown, to the south are reddish brown, and to the north become ashy gray at the surface. Wet soils are also shown, as are alluvial soils, and shallow steep soils such as in the Sand Hills of Nebraska, and in the Kettle Moraine of Wisconsin. Names of individual soils are listed, and brief descriptions are given in the bulletin, which also contains pen sketches of representative soil profiles.

The new colored soil map is a fine example of the printing craft. It reveals a most interesting pattern of nature, onto which human beings are in the process of superimposing another pattern of roads, highways, fields and cities. With the map at hand, one can drive across the region and note the major changes in color of soil and character of landscape. Yet only in fence rows and protected lots and in valuable wildlife, forest and range preserves can we see the face of the North Central Region as it was before we undertook to convert it into a great "bread basket" and "work shop."

(Ed. Note: See Wisconsin portion of map on back cover.)

FEDERAL AIDS IN AGRICULTURAL RESEARCH*

By R. J. Muckenhirn, Asst. Director
Wisconsin Agricultural Experiment Station

The U. S. Department of Agriculture was established in 1862 during the administration of Abraham Lincoln to promote agricultural interests and to conduct research. Some of the states also founded experiment stations in the latter half of the last century--the Wisconsin Agricultural Experiment Station was established in 1883. However, not until federal grants were made to each of the states in 1887 did agricultural research have an assured future. These first grants were only $15,000 per year to each state but they launched agricultural research in the states somewhat as Congress had launched federal research by establishing the U. S. Department 25 years earlier.

As these early actions recognized, research has a way of serving both state and national interests whether it is done in a state laboratory, a federal research station, or an industrial organization. Much of the benefit of research in a state accrues to that state but a portion, and sometimes even a major portion, benefits other states or the entire nation or the world. Thus, the federal grants to state experiment stations are now not a means of encouraging the states to engage in agricultural research but are more in the nature of a concrete expression of the federal, regional, or interstate interest in the returns from it. The finding of a new vitamin, or genetic principle, or marketing technique results in higher efficiency in farming, or in lowered costs or higher quality of food for citizens of all our states, not merely for the state making the discovery.

In 1888 the federal grants constituted over one-half of the budget of the Wisconsin Agricultural Experiment Station. Today, they constitute about one-sixth. Federal grants make up only one-fourth of the total funds available for the experiment stations of the 48 states and three territories. They do, however, serve several purposes exceedingly well.

First, Federal grant programs particularly emphasize cooperation between states in research. They help to smooth the path of state researchers by providing funds for planning and coordination, interstate travel, central service facilities, and special means of publication. This has been one of the most significant developments of the last 12 years. Scientists from each of the 12 states of our North Central region now confer annually on more than 50 different projects. They share the work to be done, plan and write publications jointly, and make progress faster by pooling their knowledge and experience. This regional research system has done much to strengthen, coordinate and accelerate agricultural research. While the major costs of the work are borne by the states, the federal grants have provided the stimulus to establish and develop this cooperative system.

Second, federal grants to state and territorial experiment stations support and encourage research aimed toward developing

* - From a paper presented before the Wisconsin chapter of the Soil and Water Conservation Society, UW Memorial Union, Madison, January 24, 1958.

improvements in the marketing and distribution system and in the processing, packaging, and handling of agricultural products. This function has been especially emphasized by Congress in recent years when surpluses in certain commodities have existed.

Third, federal aids tend to emphasize researches which are of regional or national interest, such as studies of soil and water management, or basic research on soil classification, plant or animal genetics or nutrition, and plant and animal diseases. Another considerable segment is in the field of economics, including land tenure, land use, agricultural statistics, population changes in rural areas, and marketing of the products of the farm and the farm woodlot. For example, the school milk program so widespread today has been guided and advanced throughout by cooperative research on the methods for and benefits from serving milk at low cost to school children during the school day.

In recent years, federal support by contracts and special agreements has become more important. If a particular research assignment can be more readily or more effectively done by a state agency, the federal government may enter into a contract to get the work done, not by federal scientists or a federal agency, but by the state. This has been extended in certain fields of commercial interest to private and industrial laboratories as well.

Federal aids to research are represented not only by grants of funds and contracts, but by direct participation of scientists from the U. S. Department of Agriculture in projects of interest to Wisconsin. For example, much Wisconsin research on pasture grasses, improvement of barley and wheat, and control of soil nematodes, is conducted by federal employees cooperating with the Wisconsin Agricultural Experiment Station. In a number of cases, an employee receives part of his salary from state and part from federal appropriations. Research in soil and water conservation has been particularly well supported in this manner. Much research on water table levels, on watersheds, on forestry, and on weather is done by federal employees stationed in our state. Thus, research is truly a matter not only of federal aids but of actual federal participation and cooperation in vital joint federal-state projects.

# # #

A NOTE ON THE COVER PAINTING

DONALD M. ANDERSON, artist for the cover painting on this issue, is an inveterate countryside hiker. Many of the motifs in his paintings and drawings are based on plant, insect and other forms to be found in the Wisconsin landscape.

He is an Associate Professor of Art and Art Education at the U.W.; completed his M.F.A. degree at the Univ. of Iowa, teaches painting, commercial design, and lettering; has been immensely influential during his years on the Madison campus in improving the clarity and aesthetic quality of all university publications; and during the last year has completed the art editorship of the volume "Behavior of Man" by KARL U. SMITH of the U.W. and his brother of the Princeton Univ. faculty. Prof. Anderson exhibits paintings widely in the state and nationally. The Andersons live in Crestwood, where Mrs. Anderson has become an excellent gardener in a neighborhood of unusual gardens. She is also a gifted designer and weaver of fabrics. ---Frederick M. Logan

# # #

OAK WILT: ITS SIGNIFICANCE, SPREAD & PREVENTION*

By A. J. Riker
Dept. of Plant Pathology, UW

The improved understanding of the oak wilt disease has been possible only because of hearty teamwork between a number of institutions and individuals. After this serious disease was first described and its presence discovered over many of the 18 states in which it has now been reported, considerable concern was felt about this threat to the oak forests of our country. . . . The causal fungus, Ceratocystis fagacearum (Bretz) Hunt, has a broad host range. All of the species of oak trees tried have been found susceptible. Trees in the red oak group have been killed quite rapidly. Furthermore, chestnuts have wilted following inoculation. Even Jonathan apple trees have been killed. The fungus has survived in sassafras trees for over 2½ years.

The possibility of disease-resistant oak trees has been studied. None have been found in the red oak group. Some trees in the white oak group have persisted for considerable time after infection. ... The period of time during which oaks could be infected has been critical. The trees proved to be particularly susceptible to infection in the spring between the time of bud break and the time when the leaves became mature. ... Once the fungus has invaded a tree, no control of oak wilt has been found possible. Pruning and fertilizing have failed. A number of chemotherapeutic agents have been tried, but so far none has been able to cure the disease. One of the great difficulties has been that in a wilting tree the vascular tissues have been so plugged with gum and tyloses that chemicals could not move easily from one part of the tree to another. In some cases when the chemicals were applied about the time the trees were inoculated, the infection was delayed for as much as one or two years. The control measures thus have depended on means of preventing the spread of the disease. ...

Since long-distance spread in nature came largely between the time when the buds opened and the leaves became mature, one should avoid wounding trees especially at that time. However, if pruning was necessary, the trees could be protected by painting the wounds promptly with any one of several good tree paints. Numerous attempts have been made to control oak wilt by cutting down and destroying the wilted trees as they died. However, such measures have commonly failed because of the fungus movement through root grafts. ... The spread of oak wilt fortunately is much less rapid than that by many other diseases, such as the chestnut blight. Once the fungus has entered a tree, it has proved extremely virulent; but its method of transmission from one tree to another so far has appeared to be relatively slow. We can only hope and pray that no really good vector comes along. Meantime, with continued research there is an excellent possibility of bringing this disease well under control.

* - Excerpts from paper presented at annual meeting of Society of American Foresters, Syracuse, November 10-13, 1957.

# # #

E. B. Fred

EDWIN BROUN FRED — BACTERIOLOGIST

(A Retirement Profile)

That a good scientist can become an able administrator was demonstrated very well by EDWIN B. FRED in the 13 years he led the University of Wisconsin as its 12th President. On July 1, 1958, after 45 years of service to the people of Wisconsin as professor of agricultural bacteriology (1913-33), dean of the Graduate school (1934-41), dean of the College of Agriculture (1943-45), and University President (Feb. 15, 1945-July 1, 1958), he retired as President Emeritus and Professor Emeritus in Bacteriology.

Numerous other honors were received by President Fred shortly before his retirement. Among these was the degree of Doctor of Laws conferred by the University of Wisconsin and presented by WILBUR N. RENK, President of the Board of Regents, at the 105th Commencement. Tributes also came from the alumni association, the faculty, student organizations and the State Medical Society of Wisconsin.

Professor Fred has been a member of the Wisconsin Academy of Sciences, Arts and Letters for 37 years. During this period he has shown deep interest in the Academy's program and has supported it with his sustaining membership. In his address of welcome to the 83rd Annual Meeting of the Academy at Madison in 1953 he stated, "The Wisconsin Academy has played an important role in the life of Wisconsin. We are proud of Wisconsin and her accomplishments, and the Academy has had no small part in the attainments for which Wisconsin is known."

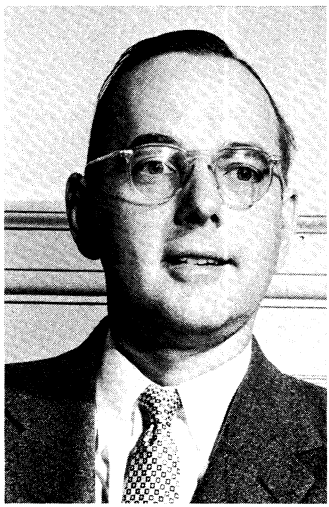
Born in Middlebury, Virginia, on March 22, 1887, E. B. Fred came to the U.W. Dept. of Bacteriology in 1913 after receiving his B.S. and M.S. degrees from the Virginia Polytechnic Institute and his Ph.D. from the University of Göttingen, Germany. He was the senior author of an encyclopedic work on soil bacteria, "Root Nodule Bacteria and Leguminous Plants" (Madison, 1932), which resulted largely from studies he began in 1913. During World War I he served as a first lieutenant in the army's chemical warfare branch while in World War II he was chairman of the National Academy of Sciences' Committee on biological warfare and also director of a War Research Service program in this field.

Besides six honorary degrees, he has received many significant honors and served in important positions. He has been elected to the National Academy of Sciences and the Society of American Bacteriologists as well as other

professional organizations. He is a member of the National Science Foundation Board, Carnegie Board of Trustees, Advisory Council on Medical Education and Wisconsin Historical Society Board.

During his term as president, over 51,000 students received degrees from the U.W. --nearly half of the 119,000 total during more than a century. At the beginning of his 13th year, President Fred participated in the rededication of the "Sifting and Winnowing" Plaque at Bascom Hall on February 15, 1957 when he made the following statement: "...it seems to me that this rededication today should be marked by renewed intent to employ to the fullest degree the principles of the plaque--to utilize their fullest power for the advancement of knowledge." --- W.E.S.

NEW LIFE MEMBER CHARLES D. GELATT



CHARLES GELATT was born at La Crosse on January 4, 1918. He was educated in the public schools of La Crosse, at Lake Forest Academy and the U.W. where he was awarded both the bachelor's and master's degrees in 1939. He was elected to Phi Beta Kappa in his junior year, and throughout his university career maintained an almost perfect average.

On graduation, he entered his father's company, the Northern Engraving and Manufacturing Company of La Crosse, and by World War II he had succeeded him as general manager. The company won the Army-Navy award for excellence in shell case production four times during the war, and since, with several associated companies, has pioneered in introducing many manufacturing innovations. Gelatt was appointed to the U.W. Board of Regents in 1947. In 1955 he became the youngest president ever to head the board and he was re-elected to that office the following year. In 1956 he was reappointed to serve as regent until May 1, 1965. Also in 1956 he served as Chairman of the Coordinating Committee for Higher Education in Wisconsin.

# # #

A Message from the President

President ROBERT J. DICKE, (Left) Madison with President-elect HENRY MEYER, Whitewater on the Academy's Kettle Moraine field trip on May 4, 1958 (Milw. Journal photo)

Our Academy established by Charter in 1870 now rapidly approaches a century of unique service to the citizens of Wisconsin by embracing the vastly expanded fields of the sciences while still maintaining its continuous support and recognition of the humanities. The Academy has passed through a serious depression of interest when we compare a fragile membership of 362 in 1952 with the current one of about 1200 which has so rapidly expanded in recent years.

This is a healthy recovery and should serve as a real incentive for our colleagues to reach a membership potential which should result in an even greater future expansion. These are the results of individual efforts that are gradually becoming a unified effort. The excellent Academy Review and a continuously improving Annual Meeting exemplified by the recent program at Whitewater are milestones in this recovery.

Difficult problems remain, however, before the completion of our centennial of service. The development of an effective program of financing the activities of the Academy should be given our concerted effort this year. Publication of the TRANSACTIONS has been a perennial financial burden. Revision of our publication policies and/or a substantial and dependable outside means of support appears to be the only solution to this problem. A nominal increase in membership dues will at best meet only the remainder of our current expenses. However, with an obviously increasing interest and enthusiasm for the support of our Academy, it is my sincere opinion that the financial difficulties which face us during this coming year are a difficult but not an insoluble problem.

Program
of the
Joint Meeting
with the
Wisconsin Junior Academy
of Science

Saturday, May 3, 1958

ACADEMY SECTIONS
Headquarters — Harold Andersen Memorial Hall

REGISTRATION
8:30 A. M.

SECTION MEETINGS OF THE ACADEMY
9:00 A. M. to 12:00 Noon
Audiovisual Room, Room 30 and Room 32
(all in Basement)

Call to Order — Audiovisual Room
RAYMOND H. REIS, S.J.
President of the Academy

PRESENTATION OF PAPERS
SECTIONS A, B, and C.

Section A — Room 30

Professor C. Paul Grant, presiding

Haskell M. Block, University of Wisconsn (Madison). *Hugo von Hofmannstahl and the Symbolist Drama.* (20 min.)

Walter F. Peterson, Milwaukee-Downer College. *Penetration of the Social Gospel in American Protestantism during the Progressive Period.* (25 min).

Ludwig K. Pauly, University of Wisconsin (Milwaukee), *Systematic Serology of the Felidae.* (20 min.)

William Kesselman, Milwaukee, *Senior City Redevelopment.* (15 min.)

Past President **Ralph N. Buckstaff**, *presiding*

T. J. Spencer, University of Wisconsin (Madison), *Shelley's ALASTOR and the Romantic Drama.* (20 min.)

Thomas R. Dale, Milwaukee - Downer College, *Robert Browning — Dramatist.* (30 min.)

Charles R. Forker, University of Wisconsin (Madison), *Archbishop Laud and Shirley's The Cardinal* (20 min.)

Section B — Room 32

Past President **Stephen F. Darling**, *presiding*

Walter H. Ebling, University of Wisconsin (Madison), *Factors in Wisconsin's Rising Milk Production.* (20 min.)

John W. Baxter, University of Wisconsin (Milwaukee), *Notes on Rocky Mountain Rust Fungi.* (20 min.)

Fred H. Kaufmann, University of Wisconsin (Milwaukee), *The Origin of Plant Taxa and their usage.* (20 min.)

Dorothy Dee Bailey, Wisconsin State College, Superior, *The American Literary Criticism of George Meredith,* 1860-1895. (20 min.)

PRESTON C. HAMMER, Univ.of Wis. (Madison), Words, Symbols, and Learning, (20 min.) Read by DON E. SCHLAFKE, UW,(Madison)

Cyril C. O'Brien, Marquette University, *Theories of Learning.* (20 min.)

S. A. Wilde, University of Wisconsin (Madison), *Woodland's Muse and Music.* (20 mins.)

N. B. Dexter, Northland College, *The Northland College Community Development Program.* (20 min.)

Berenice Cooper, Wisconsin State College, Superior, *The Unorthodox Abbé: A Re-Appraisal of a Forgotten Novel by Abbé Prévost.* (15 min.)

Section C — Audiovisual Room

PROFESSOR **Robert J. Dicke**, *presiding*

W. A. Noel and F. D. Hole, University of Wisconsin (Madison), *Soil Color as an Indicator of Nitrogen Content in Some Wisconsin Soils.* (20 min.)

Robert West, University of Wisconsin (Madison), *Explorations in the Interior Ranges of British Columbia. The Clachnacudainn Snowfield.* (20 min.)

John T. Medler, University of Wisconsin (Madison), *Trap-Nest Studies on Bees and Wasps.* (20 min.)

F. Chandler Young, University of Wisconsin (Madison), *A Mushara in India.* (20 min.)

Past President **L. E. Noland**, *presiding*

Ruth C. Noland, Madison, *Observations on the Behavior of an Urban Chipmunk Population.* (20 min.)

James R. Love and H. H. Hull, University of Wisconsin (Madison), *Standardization of Soil Testing in Wisconsin.* (20 min.)

James D. Anthony, University of Wisconsin (Milwaukee), *A Review of the Monozoic Cestode Family Lytocestidae.* (20 min.)

F. T.Thwaites, University of Wisconsin (Madison). *Land Forms of the Baraboo District Wisconsin.* (15 min.)

JUNIOR ACADEMY LUNCHEON (for all)
Saturday, 12:15 p. m., Cafeteria

WELCOME
Dean CORD O. WELLS

ANNUAL BUSINESS MEETING
3:30 to 4:00 p. m., Audiovisual Room

TOURS OF THE CAMPUS
5:00 to 6:00 p. m.

The Eighty-Eighth Annual Meeting

Saturday, May 3, 1958
and
Sunday, May 4, 1958

Harold Andersen Memorial Building
and Lucy Baker Hall

Wisconsin State College
Whitewater, Wisconsin

Wisconsin Academy
of Sciences,
Arts and Letters
and the
Junior Academy
of Science

PROGRAM COMMITTEE
Katherine G. Nelson, Chm. — Robert H. Irrmann
Joseph G. Baier — John W. Thomson
Robert J. Dicke — Francis D. Hole

LOCAL ARRANGEMENTS
Mr. and Mrs. P. A. Carlson — Mr. and Mrs. H. E. Lotte
Mr. and Mrs. J. J. Chopp — Mr. and Mrs. Henry Meyer
Mr. and Mrs. T. C. Hartley — (Chairman)
Mr. and Mrs. L. Liedtke — Mr. and Mrs. R. W. Prucha
Miss Lillie Zarling

ACADEMY RECEPTION
Mrs. Cord O. Wells and assistants

RECEPTION FOR MEMBERS AND GUESTS
4:00 to 5:00 p. m. — Exhibit Room

On Exhibition — Art of the Kettle Moraine
by
Edward Boerner — Peter Rotier
Hulda Rotier Fischer — Robert Schellin
Mel Kishner — Max Fernekes
Shomer Lichtner — Chester Mayer
Leon Pescheret
and Art Students of Wisconsin State College, Whitewater, under the direction of Miss Catherine Crossman

SYMPOSIUM ON THE KETTLE MORAINE
1:30 to 3:30 p. m. — Audiovisual Room

DEAN JOSEPH G. BAIER, *presiding*

Ernest F. Bean, formerly State Geologist, Madison, GEOLOGY

Warren C. Fischer, Professor of Geography, Wisconsin State College, Whitewater, PREVIEW OF SUNDAY'S TRIP

Warren C. Wittry, Curator of Anthropology, State Historical Society of Wisconsin, ARCHEOLOGY

John F. Kienitz, Professor of Art History, University of Wisconsin (Madison), ARCHITECTURE

Peter J. Salamun, Associate Professor of Botany, University of Wisconsin (Milwaukee) BOTANY

Clyde T. Smith, Superintendent Kettle Moraine State Forest, KETTLE MORAINE STATE FOREST

Raymond T. Zillmer, Attorney, Milwaukee, RECREATION

ANNUAL ACADEMY BANQUET
6:30 p. m.
Whitewater Country Club

Guest of Honor — HUGO W. ROHDE

Toastmaster
WALTER E. SCOTT
Wisconsin Conservation Department

Announcement of the Winners of the Wisconsin Science Talent Search
PROFESSOR ROY J. CHRISTOPH
Carroll College

A WORD OF WELCOME
PRESIDENT ROBERT C. WILLIAMS
Wisconsin State College, Whitewater

Presidential Address
A STUDY IN HUMAN GENETICS
PRESIDENT RAYMOND H. REIS, S.J.

SCIENCE AND MAGIC
PROFESSOR JOSEPH J. CHOPP
Biology Department, Wisconsin State College
Whitewater

Sunday, May 4, 1958
9:00 a. m. to 3:00 p. m.

TOUR OF
PARTS OF THE KETTLE MORAINE

The tour begins in front of the Main Building, Wisconsin State College, Whitewater, Wis. Transportation by chartered buses, only.

Tour leader:
Prof. Warren C. Fischer, Chm. of the Department of Geography, Wisconsin State College, Whitewater

Botany Leader:
Emil P. Kruschke, Associate Curator of Botany, Milwaukee Public Museum.

JUNIOR ACADEMY SECTION

Scientific Papers

Saturday, May 3, 1958

9:30 A. M. to Noon

Presiding: Jane Karau, Columbus High School, Marshfield and Rodger Gabrielson, Mary D. Bradford High School, Kenosha.

Tom Gregory, Nicolet High School, Milwaukee. *The Hypersonic Wind Tunnel, its Construction and Uses.*

Jeffrey M. Dizon, Nicolet High School, Milwaukee. *Principles of the Field Emission and Field Ion Microscopes.*

Edward Carberry, Nicolet High School, Milwaukee. *The Preparation and Reactions of the Grignard Reagents.*

Glen Kuswa, Wauwatosa High School, Wauwatosa. *Electron Microscope.*

William Barney, Appleton Senior High School, Appleton. *Experiments with Drosophila.*

Gerald Miller, Brillion High School, Brillion, *Building a Spectroscope.*

Dale Reimer, Lincoln High School, Manitowoc. *Bumblebees.*

James Schleis, Lincoln High School, Manitowoc. *Power of the Future.*

Jane Horock and Nancy Natwick, Lincoln High School, Wisconsin Rapids. *Phenol Coefficient, Anti-biotics and their Effect on Fungi.*

John Kingdon, Lincoln High School, Wisconsin Rapids. *Experimental Embryology.*

1:30 P. M. to 3:30 P. M.

Jerome Kurz, John Edwards High School, Port Edwards. *A Solar Furnace.*

Dick Thomas, Lincoln High School, Wisconsin Rapids. *Simple Electronic Computers.*

Tim Hulich, Aquinas High School, LaCrosse. *An Electrocardiograph and Encephalograph.*

Daniel Gollnick, Central High School, LaCrosse. *An Experimental Method of Determining Neutron Cross Sections.*

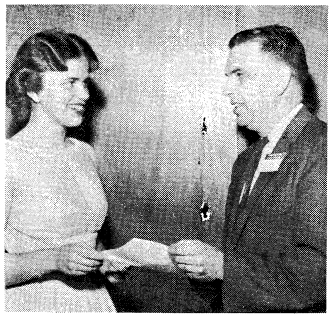
Carol Lowe, Chetek High School, Chetek. *Mathematics and Music.*

Allen Isensee, Sparta High School, Sparta. *Control and Use of Solar Energy.*

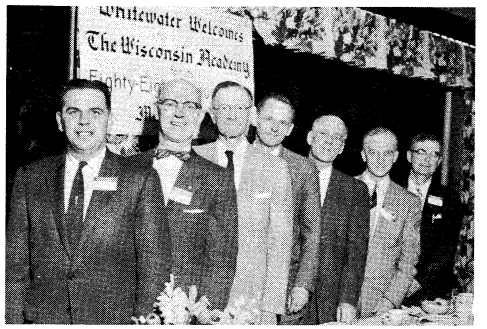
Election of Officers

Presentation of Awards

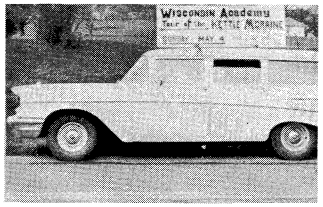
(1) Mr. CLARENCE L. BUCK of Garrett Park, Md. signing up at the registration desk



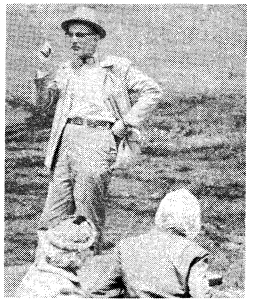
(2) JANE KARAU of Columbus High, Marshfield, receiving her award as top winner of the 1958 Wisconsin Science Talent Search from Professor ROY J. CHRISTOPH, Chairman of the Science Talent Search Committee



(3) Some new officers and banquet speakers (left to right) ROY J. CHRISTOPH, V-P in Sciences; HENRY MEYER, President-elect; HUGO W. ROHDE, Guest of Honor; ROBERT J. DICKE, President; WALTER E. SCOTT, Librarian and Editor of Academy Review; CYRIL C. O'BRIEN, V-P in Arts; and JOHN W. THOMSON, Chairman, Junior Academy of Science



(4) Lead car on the Kettle Moraine Tour



(5) EMIL P. KRUSCHKE of the Milwaukee Public Museum makes a point on the need for wild flower preservation

(6) Professor WARREN C. FISCHER lecturing to tour group in a gravel pit near Whitewater

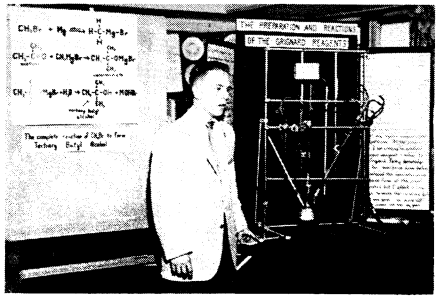
(7) Professor FISCHER pointing to a Kettle Moraine feature in the distance

(8) Professor and Mrs. AARON J. IHDE enjoying a picnic lunch with their son on the field trip

Photo Credits: WALT PETERSON of Whitewater (Member N.F.P.A.) for Nos. 1, 2, 3 and 11 and Professor STEPHEN F. DARLING, all others

(9) Stop for lunch at the Whitewater Lake Kettle Moraine picnic area

(10) President-elect HENRY MEYER (left) and President ROBERT J. DICKE before the Kettle Moraine tour

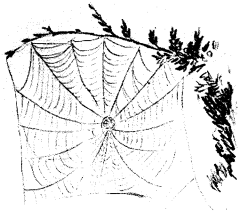


(11) EDWARD CARBERRY of Nicolet High, Milwaukee, presenting his paper to the Junior Academy

DOMAIN OF LETTERS

Education Beyond the High School was the subject of a Governor's Conference in Madison on April 25, 1958, under the chairmanship of Academy member ALLEN ABRAMS of Wausau. We are fortunate indeed to have the privilege of publishing some remarks made at that Conference by Governor VERNON W. THOMSON, and certain essentials in an altogether informative and stimulating address by the Honorable CHARLES D. GELATT, Regent of the University of Wisconsin. WALTER E. SCOTT, Editor of the Review, has reluctantly consented to the publication here of one of his own poems. Readers will feel grateful for the persistence which in the end won for them The New Life.

THE NEW LIFE



Let poetry respond to poetry
And silence rest its wearied self;
For what are beauty, love and joy
But drops of dew upon the spiderweb of life,
That grow in darkness to reflect the dawn
And disappear but to return again?

Emotions are the tower of the mind
Whose windswept summit rises with the stars
And whose horizons are the breath of yesterdays--
The source of songs that yet may be.

My soul flies high into the realms of bliss
Where nothing's worth a word but ecstasy;
And where the sordid things are as the stars by day--
As beautiful as you would make them be.
Here hate is love that waxes too intense
Or love that only lacks intensity;
Here sorrow germinates a deeper joy--
A gentler and more peaceful happiness.

---Walter E. Scott

CHALLENGES FOR HIGHER EDUCATION

By the Hon. Vernon W. Thomson
Governor of Wisconsin

The theme of our conference has national and international overtones. Our leadership in the world, in fact our very survival as a free country, is being met with a massive challenge such as never before in the epic of America. Both our leadership and our survival depend as much upon the strength of our educational system as upon the strength of our military forces. Indeed, our educational system is the keystone of our technological military might.

We have another challenge besides the one from abroad. It is a challenge from within to provide the golden key for a questing crowd of young men and women who will be sweeping out of our high schools during the next two decades; all of them seeking the wealth of life. And in an era of bounding technical advances, we must equip them with broader and better education than ever in our past.

The problems raised by our educational needs are breathtaking. To me one of the most alarming is how to persuade more of our youth to seek education beyond the high school. It has been estimated that at least 50% of our children graduating from the secondary schools would benefit from some additional formal learning. The results of a survey taken last spring among Wisconsin high school seniors reveal the plans of the 50% of these youngsters who could benefit from education beyond the high school. Of the top 50% of the class, almost half of these--over 42%--indicated that they had no plans to pursue any form of education once they were graduated. This is a shocking statistic!

It is a fact that some of these graduating seniors were frustrated in their desire to go on schooling themselves because of a lack of finances. It is also a fact that many of these graduating seniors had no desire to go on at all. This lack of motivation is deeply disturbing when you catch a glimpse of the future. By 1975, the demands for specialized, educated men and women will have jumped in all occupations: among professional and technical personnel, up 75%; proprietors and managers, up 14%; clerical and sales, up 49%; craftsmen, up 45%; operatives, up 38%; service personnel,up 27%.

The demand is up all along the line, except in one category: the unskilled laborer. What will happen to the people who, capable of it, have not gone beyond the high school for education? The youngster today who does not proceed beyond the high school in educating himself will find it increasingly difficult to obtain mental and social satisfaction, and to make a decent living. He will become a drag on his family, his friends, his community, his government. There will be no

escape; the unskilled, uneducated worker of today will become the social and economic dependent of the future.

In recent years there have been murmurings that our young people should strive mightily for what is termed "life adjustment"; that they should be encouraged to seek group or mass approval, and that this should be their guiding light in life.

I sincerely hope not! The twentieth century has been called the Century of the Common Man. We have 5,000 years of recorded history behind us. Yet, never has so much been accomplished for the common good in so short a time as in the last 50 years. And these accomplishments have not been achieved by persons seeking only group approval as the major goal in human living. These advances have been made by the uncommon man -- the uncommon man in the field, in the factory, in business, in the professions, in politics. These are the leaders who have won the great advances in human dignity and in the rights of man. It has been the uncommon men and women who, filled with creative criticism, have educated themselves, grasped upwards and pulled the world with them. Nowhere is this more evident than in America.

What we need in our state today are more uncommon men and women, a Wisconsin community led by uncommon men and women, stirred by constructive imagination, seasoned by intellectual disciplines, who will uplift Wisconsin to a plateau beyond the hopes and dreams of yesterday.

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WISCONSIN'S FUTURE EDUCTAIONAL NEEDS

By Charles D. Gelatt
Regent, University of Wisconsin

Thanks to many months of study by the staff of the Coordinating Committee for Higher Education, the general outlines of our educational future are fairly sharply drawn. Our gathering here today demonstrates, I hope, both our understanding of education's contributions in the past and our concern for its continuing progress. Our nation is involved in a supreme struggle, testing the strength of our culture, our statesmanship, our economic way of life, and our arms. The answer to what success we have had can be traced to our people -- their industry, inventiveness, flexibility, and their faith in education.

Wisconsin pioneered vocational training and today has a system which is the envy of most of its neighbors. We have broad opportunities for education beyond the high school -- County Normals, State Colleges, Private Institutions of almost every type, and a University which is rated one of the top ten in the nation. I will outline six basic educational needs which I believe are paramount:

First: Education beyond the high school for greater numbers of young people. Three factors are at work here: Our increasing population; the desire of our young people; the need in our economy for more and better trained young people. The factor of an increasingly larger number of youngsters seeking further education is likely to continue into future generations. This is prompted by the natural desire of parents to seek for their children a better way of life. It is also prompted by the grow-

ing complexity of our society. The shrinking of our world and the multiplication of our powers for destruction have intensified our need for sound values and high standards.

Second: Broader educational opportunities. We must cover the major fields of learning adequately, provide a variety of types of education, and spread opportunities geographically. How adequately we now do these things, how better we can do them in the future are the subject of a variety of studies under way by the Coordinating Committee for Higher Education. Fifty-four cities located in 40 different counties, have at least one college listed in the U.S. Directory of Institutions of Higher Education. In addition, we have 60 vocational and adult schools, extension classes and institutes in every community where a sufficient number of students desire them, and correspondence courses everywhere there is a mailbox. Yet, considering the individual needs of young people, higher education opportunities are distributed somewhat unevenly in our state; and we have some rather knotty problems where specialized types of education are concerned. Perhaps a system of Junior Colleges is one answer. Perhaps private institutions, which have been growing in number in our state, will fill in some of the gaps. Yesterday's "Wall Street Journal" reports on several other interesting suggestions. At present, Wisconsin lacks degree programs in such fields as architecture, aeronautical engineering, forestry, public health, and veterinary medicine. We must of course develop cooperative programs with our sister states to allow economical study in certain limited demand, high-cost subjects.

Third: Better counselling and guidance. The state's educational system should help each citizen reach his highest achievement. All our young people should not be forced through the same educational die. For some, the high schools provide an optimum of challenge. For others, post-Doctorate studies are essential. Just as it is a tragedy that some of our young people of highest intellectual potential are not obtaining the education necessary to achieve it, so also is it tragic to see a youngster, forced beyond his capabilities, leave an institution in academic disgrace. Roughly one third of our top high school graduates last spring were not planning to continue their educations, and about 45% were not planning to go to degree-granting colleges. These are the young people our state and nation need for future leaders. There seems to be considerable evidence that inadequate counselling--poor motivation--had much to do with the loss of potential talent.

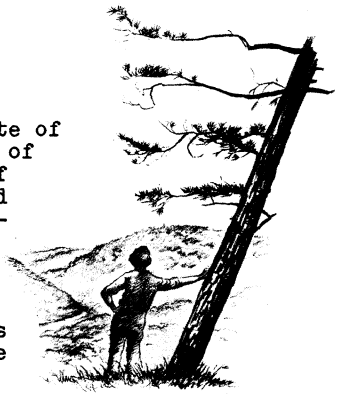
Fourth: Expansion of specialized educational services. Here I refer to research which is the by-product or, if I can coin a term, the "co-product" of higher education. A casual glance through such publications as the Annual TRANSACTIONS of the Wisconsin Academy of Sciences, Arts, and Letters indicates how widespread such study is among our teachers. Its impact on our society is great.

Fifth: Adequate financing. There are three primary areas of need--our future students for loans, scholarships, and work programs; our teachers for more adequate compensation; our facilities and programs. Beardsley Ruml in a study under auspices of the Ford Foundation has reported significantly upon certain basic needs. He particularly deplores the trend away from proper financial support.

Sixth: Cooperation of all who value education beyond the high school. I call today for loyalty to education beyond institutional limits, loyalty to education beyond the high school as a way of life, a guarantee of progress, an ideal.

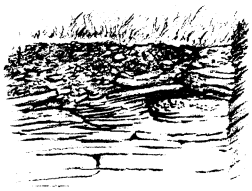
# # #

FASSETT HONORED IN PARFREY'S GLEN DEDICATION



"Must all rare plants suffer the fate of Franklinia?" That classroom discussion of the disappearance at the hands of man of some of our very rare and beautiful wild plants seems to have been especially influential in the life of NORMAN C. FASSETT. He studied at Harvard University under Professor MERRITT L. FERNALD, whose plant geography course was famous. In 1925, upon receiving his degree from Harvard, Fassett came to the University of Wisconsin's Department of Botany. Patterning one course after Fernald's, he added the enlightenment of field trips to interesting botanical areas. Students became aware of the disappearance of many elements of our flora under pressure of an ever-encroaching civilization. Fassett taught of the ethical need to preserve wild plants for the delight of future generations, as well as the practical foresight of possible usefulness. Habitat, he pointed out, was all important in preservation of a species.

On May 17, at Parfrey's Glen State Park in Sauk County, a memorial plaque to NORMAN FASSET was dedicated. He was honored for his work as first chairman of the Natural Areas Committee (1950-54) and eulogized by MRS. JOHN W. THOMSON. ALBERT M. FULLER, curator of botany at Milwaukee Public Museum, was master of ceremonies, and C. L. HARRINGTON, superintendent of forests and parks, told how the area had been cherished for 90 years by a single family before acquisition by the state.



Regarded by naturalists as a remnant of a subarctic landscape, many northern plants grow in the little valley. The driftless area aconite is its rarest prize, with meadow horsetail and cliff clubmoss among other unusual plants. The weathered limestone walls have two layers of water-polished pebbles, further record of its interesting geologic history.

One of 29 scientific areas,it was the first to be so designated in Wisconsin. Some are less well known, their very anonymity their best protection. Study groups have access to all the areas, where nature is allowed to run its course. This heritage is part of the legacy left by Norman Fassett. As chairman of the Natural Areas Committee appointed by the Conservation Commission at the instigation of ALDO LEOPOLD, he reported on 13 desirable areas to be preserved and laid the groundwork for a continuing effort to set aside other tracts. In 1951, the legislature created the State Board for the Preservation of Scientific Areas, a more permanent and authoritative group, whose work is familiar to Review readers.

# # #

CHARLES L. FLUKE—ENTOMOLOGIST

A Retirement Profile

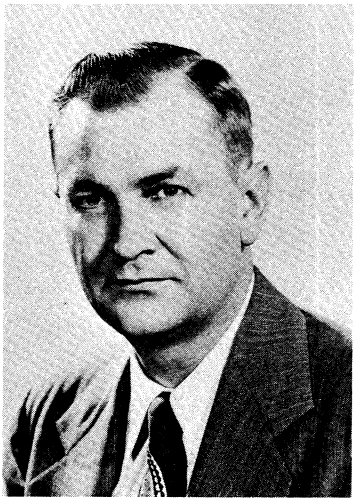
As a fitting introduction to the development of entomology in Wisconsin, one can hardly neglect the pioneering contributions made by CHARLES LEWIS FLUKE. A versatile mild-mannered person, who may well be called a "Father of Entomology Teaching in Wisconsin" has distinguished himself well within his profession and by his teachings. He has attracted to the field of entomology the enthusiasm and interest of many students who enrolled in his classes, and the effectiveness of his teaching has brought to him the reward of having been one of the best instructors on the campus of the College of Agriculture. Several of his graduate students hold key positions of responsibility in the fields of entomology, agriculture, industry and in the U.S.D.A. One of his earlier students has been made Dean and Director of a mid-western college, and four others are now heads of entomology departments.

Professor Fluke was born in Grand Junction, Colorado in August, 1891. He graduated with a B.S. degree from Colorado Agricultural College in 1916, then came to the U.W. where he obtained the M.S. degree in 1918 and in 1928 a Ph.D. in entomology. His specialized interest has been devoted to the taxonomy and biology of Syrphidae. Many technical papers on the subject have been published by him and at the present time he is considered a world authority on this insect group. Part II of his "Catalogue of the Family Syrphidae in the Neotropical Region" has just been published by the Revista Brasileira de Entomologia in Sao Paulo.

In the field of economic entomology he has made many significant contributions, and his summer research on insect control has taken him to all important agricultural areas in the state. He is particularly well known to Wisconsin fruit growers for his help in control of apple maggot, cherry case borer, raspberry borer, codling moth, plum and apple curculio, and others. He is the author of 32 economic entomological papers and many popular articles, several of his papers appearing in the Academy's TRANSACTIONS and the Review. He has been affiliated with the Academy since 1919 and was elected President in 1954, having since served on the membership and other committees. Beginning in 1942, he acted as Chairman of the Department of Entomology until 1946. He is also a member of Phi Sigma and Sigma Xi.

On May 12 he was honored at a recognition dinner attended by many colleagues, former students and other friends. At that time it was announced that emeritus professor rank had been recommended for him and it has been approved by the Regents. A plaque presented at the dinner reads: "Professor Charles L. Fluke, Ph.D. In recognition of 42 years distinguished service to teaching and research in entomology at the University of Wisconsin, 1916-1958".

For some years he captained a very successful faculty bowling team and he always has been a dyed-in-the-wool fisherman. Raising prize dahlias occupies much of his time but undoubtedly his main interest will remain the insect collection. --Adapted from T. C. Allen in the HEXAPOD



INTRODUCING BJARNE R. ULLSVIK

President Designate, Wisconsin State College, Platteville

On September 1, BJARNE R. ULLSVIK will become the 10th president of Wisconsin State College, Platteville. Born in Madison in 1912, he obtained his education there and was granted the Ph.D. degree at the University of Wisconsin in 1943. He taught in the public schools at Sheboygan and Madison and was a faculty member at the State College in Eau Claire. Since 1945 he has been a member of the Illinois State Normal University faculty, where he is at present administrative assistant to the president. The College Board of Regents chose him from among 50 candidates.

In addition to his official duties, he is chairman of the Public Relations Committee of the Illinois Education Association and a member of the Board of Directors. He also serves on the steering committee of the Illinois Joint Council of Higher Education. He has been very active in community affairs, as well.

A faculty of 76 at Platteville gives special major work in agriculture and industrial arts, but major work also is given in biology, chemistry, English, history, mathematics, music, physics, and speech. A liberal arts degree has been granted since 1951. This year's graduating class numbers 189.

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CHESTER O. NEWLUN — EDUCATOR

A Retirement Profile

After a lifetime of work as an educator in Wisconsin and Oklahoma, CHESTER O. NEWLUN will retire on September 1 as President of Wisconsin State College, Platteville. Since 1943 President Newlun has headed the college and has bestowed degrees on nearly 2,000 graduates. In 1943 the college's enrollment was 318, which has risen now to almost 1,100.

Born in Vernon county, Wisconsin, Newlun attended public schools, LaCrosse State College and the University of Wisconsin, earning the Ph.M. degree in 1926. He was granted the Ph.D. degree by Columbia University in 1930.

He was superintendent of schools in Hillsboro, Sauk City, and Marshfield before moving to Oklahoma. The State College Regents called him back to Wisconsin from the presidency of Northwestern State College in Oklahoma.

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JUNIOR ACADEMY NEWS

JUNIOR ACADEMY REPORT

By John W. Thomson, Chairman
Junior Academy Committee

The statewide meeting at Wisconsin State College, Whitewater, on May 3-4 is one of the best in the history of the State Academy. An exceedingly large attendance crowded all facilities and sessions of both Senior and Junior Academies were very well attended.

Membership in the AAAS was awarded to EDWARD CARBERRY, Nicolet High, Milwaukee and JANE HOROCH, Lincoln High, Wisconsin Rapids. Membership in the Wisconsin Academy was awarded to TOM GREGORY and JEFFREY DIZON* of Nicolet High, Milwaukee; GLEN KUSWA*, Wauwatosa High; WILLIAM BARNEY, Appleton High; GERALD MILLER, Brillion High; DALE REIMER and JAMES SCHLEIS, Lincoln High, Manitowoc; RONALD GATES*, Columbus High, Marshfield; JEROME KURZ*, John Edwards High, Port Edwards; TIM HULICK*, Aquinas High, LaCrosse; DANIEL GOLLNICK of Central High, LaCrosse; CAROL LOWE, Chetek High; and ALLAN ISENSEE, Sparta High. The award of $10 for the most original work presented, donated by a member of the Academy Council, was made to DALE REIMER for his work on Bumblebee Nesting Habits. Citation of merit for outstanding work also was given to those marked *.

Judging at the meeting were ROBERT POLZIN, Physics Dept., Wis.State College, Whitewater; ROBERT LaHANN, Chemistry Dept., Ft. Atkinson High, and JOHN CUMMINGS, Biology Dept., Ft.Atkinson. At elections following the papers, delegates chose as their Co-Presidents to preside at meetings next year MARGARET HICKS, Nicolet High, Milwaukee, and TIM HULICK, Aquinas High, LaCrosse.

The Junior High School Statewide Meeting, commemorating the 10th anniversary of its founding in this state by MARY A. DOHERTY, was held at McKinley Junior High School in Kenosha on May 17. A program of 42 papers made several simultaneous sessions necessary. Science projects judged outstanding were given by MARY CAMILLE MOORE, McKinley Jr. High, Kenosha; DAVID SHAPIRO, Merrill Jr. High, Oshkosh; WAYNE STEBBINS, Merrill Jr. High, Merrill, ELLEN HOLT, Nicolet High, Milwaukee; DOUGLAS BOUCHER, Purdy Jr. High, Marshfield; RONNIE YONKE, Wausau Jr. High; and JUDY GENZ, McKinley Jr. High, Kenosha. A year's subscription from a very wide choice of science magazines was their award.

Second place winners whose excellent work will entitle them to choose from a number of science magazines were DIANE GERLACH and LUCILLE TURCO, McKinley Jr. High, Kenosha; JENNIFER RICE, Adams-Friendship High, Adams; JOHN ALBERT, St. Catherine's,Racine; JAMES D. MOORE, Campbellsport High, MITCHELL WINNICK, Nicolet High, Milwaukee, and PATRICIA WHITNEY, Wilson Jr. High, Appleton. Honorable Mention was accorded to DIANE MADSON and GAIL DAVIDSON of McKinley Jr. High, Kenosha, and BOB GREENWALT, Wilson Jr. High, Kenosha.

Report on the Tenth Wisconsin Science Talent Search will be found on page 139.

MISSISSIPPI STEAMBOAT

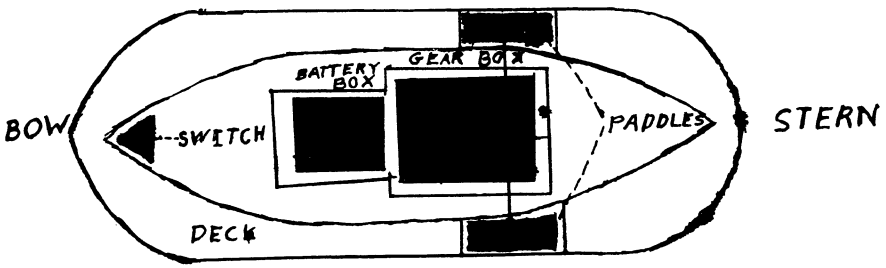
By Francis Knipp
Lincoln High School, Manitowoc

Ever since I started to draw my own plans, I wanted to build a riverboat. I finally began towards the end of last summer. At our public library I collected as much information as I could find. Although each book I found helped in some way, The Log of the Betsy Ann by Frederick Way, Jr. and Mississippi Steamboating by Hebert and Edward Quick helped me the most. In Hobby Shop catalogues I obtained a few fine pictures of the plastic non-working model of the Robert E. Lee. From these sources I proceeded to draw the plans for a working model of a Mississippi Steamboat.

The hull was constructed as it is on real boats. First an 18-inch keel was laid. Across this seven balsa wood bulkheads were spaced. One-eighth inch square chine stringers and top stringers were laid along the bulkheads. Next this frame was covered with 1/16-inch thick sheet balsa. Lastly a covering of a strong tissue, the type used on wings of model airplanes, was put over the wood covering to add strength and cover all possible leaks, followed by three coats of testors clear dope to fill up the pores in the wood and tissue and a finish of three coats of testors white paint.

The motor put in the boat was of the mini mite type (1"x1" x1½"). By using gears from my erector set, I increased its power by a ratio of 1/9. The paddles were simply 12 (1"x1½" x1/16") blanks placed on end and glued together at 30° angles leaving a hole in the middle through which the shaft passed. The motor and paddle assembly was glued into the boat at the location shown in the following top view of the boat. The deck was cut from 3/16 inch balsa to the shape shown below, leaving open spaces to allow the top of the gear assembly to stick out for repairs and one for changing of batteries.

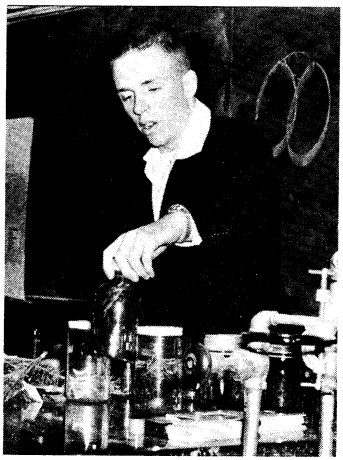
The construction of the cabins was similar to that of houses; a frame was made of 3/16 inch square balsa sticks, covered by 1/16 inch sheet balsa with windows and doors already cut. Each cabin was painted as it was completed, railings put and painted and the next cabin started. From bathtub tests I found that it floats well and moves well under power. The hull depth of 1½" is a little out of proportion to the rest of the boat; a 1" depth would have been just right. Tools used were a razor blade, tweezers, sandpaper, screwdriver, soldering iron, plane, tape, and four sizes of paint brushes.



THE ECOLOGY OF A TROUT STREAM

By Lee Husting
Lincoln High School, Wisconsin Rapids

An ecological study deals with all factors which are included in or influence a biological community. The basic factors which constitute potentially favorable trout habitat are food, shelter, gravel spawning beds, and good water. The water should be clean, cool, and swiftly flowing. I studied the "5 Mile," or Duck Creek, for a period of one year in order to observe seasonal variations. My survey was chemical, biological, and geographical.



From its source, springs in Portage county, the "5 Mile" flows west into Wood county and empties into the Wisconsin river near Port Edwards. The three watershed soil types are from source to mouth: 1) gravel, sand, loam; 2) clay, sand humus; 3) sand, gravel. The decrease in elevation between source and mouth is about 100 feet, or nearly five feet drop per mile of stream. Rate of flow remains close to .8 miles per hour throughout the entire year. The annual April crest brings the water level up as much as two feet above the low, which occurs in either mid-September or late February. Maximum and minimum water temperatures are 65° F. in August and 33° in January. Fall spawning season temperatures range from 47° to 53° F., which is about right. The stream does not completely freeze over in winter. The stream bottom varies from sandy to muddy. In quiet shallows and on the insides of curves large deposits of organic material have accumulated. Gravel, necessary for spawning, is present in small deposits throughout the stream. Farm ponds, two beaver ponds, and a cranberry marsh reservoir are formed by dams. Some rip-rap wing dams have been placed in the stream to create deep spots.

Water color varies from clear to yellow. Large increases in suspended material in the water occur during the yearly spring run-off of snow and rain. PH (determined with colorimeter) ranges from 6.8 to 7.1; 7 is neutral. Dissolved oxygen dropped to 7 PPM in February, and hit a high of 13 PPM in mid-June. Several artificial rapids aerate the water in small amounts. No chemical impurities were found in large quantities. (The Winkler method was used to make weekly checks on the oxygen content.)

Plant life contributes food, oxygen, and shelter. Vegetation on the banks is extremely important in reducing erosion. Aquatic plants include bacteria, algae, water mosses, and larger green, long leaved, seed producers (Angiosperms). Large numbers of diatoms and desmids form algal colonies which are common in late summer. Fontinalis, a water moss, is abundant among the rocks in small rapids. Sparganium, Potamageton, and Vallisneria are present in some portions of the stream. Watershed cover (about 70%) includes rushes, sedges, alders, birch, willow, pines, poplar, dogwood, elm, and oak.

Animal life is too abundant for enumeration of separate species. Some important and fairly common forms are: Protozoa--Euglena, Paramoecium, Stentor, Spirostomum; Worms--Tubifex, Nais, Turbellaria; Crustacea--Gammarum, Eubranchippus, Cladocera. Molluscs are represented by large numbers of small snails (Physa). Larval insects are present at all times, and probably make up a high percentage of trout food. Adult insects (Stoneflies, mayflies, caddisflies, beetles, flies) also are a contributing food factor during the warm seasons. Of less direct importance are birds, amphibians, and reptiles, although they are present.

State fishing regulations prohibited taking trout samples. The State Conservation Department very kindly supplied information which was obtained by using electric shocking devices to take fish samples. In October, 1955, 8,655 feet of the stream in different areas were checked. Fish recovered included: 2 previously marked Brook trout, hatchery raised; 75 natural Brook trout, 62 of which were shorter than legal "keeping size;" 8 Brown trout; 210 White suckers; 18 Northern pike; and assorted sunfish, minnows, bullheads.

The Department classed the stream as "class C" or average trout water. I believe the stream could be improved for fishing by fencing cattle away from the stream, planting willows, removing silt, tin cans, "junk," and by the wise use of wing dams, cover devices, Y or V deflectors. All of the latter may be constructed so that they will create new trout habitat. Some improvements have already been made by several interested groups and individuals.

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THE EFFECTS OF NATURAL AND MAN-MADE PHENOMENA ON THE BACKGROUND COUNT

By Daniel Gollnick
Central High School, La Crosse

A year ago I constructed a geiger counter similar in design to many on the market today. With this instrument, I began recording the background count three times daily. I recorded for a period of weeks, and noticed a variation from day to day. This raised the question, "What phenomena have an effect on the count?" On May 27, 1956 the U. S. exploded a hydrogen bomb in the Pacific. Three days after the explosion, the intensity increased 270% of the normal count. I concluded, then, that a man-made explosion has an effect on the background count.

I then borrowed a count-rate survey meter and began recording with it. I also recorded the daily air pressure with an aneroid barometer, and kept this information on graphs for nine months.

Then began a literature search for material pertaining to the effects of natural phenomena on the count. I located an article in which the author used three shielded ionization chambers instead of a geiger counter, thus recording only cosmic ray variations. His results were given in a figure that represents the % intensity change per cm of Hg. This is also known as the barometric coefficient, or the temperature coefficient when the change is found per degree centigrade. I decided to represent my results in these figures also.

Being unable to arrive at a reasonable figure, I wrote to two men who were mentioned in the article. I asked for help in

determining the method they used to obtain their results, and heard first from Dr. J. M. Barnothy, who phoned from Chicago. He informed me that he calculated his figure using multiple correlation. Next I received a reply from Dr. H. O. Curtis which contained some formulas and other useful data. I now proceeded to calculate the figures.

I first calculated the barometric coefficient. There is a linear relationship between a change in intensity and a change in barometric pressure. This is represented by the following:

$\triangle R_1 = Y \triangle R_2$. I chose R with various subscript to represent the three variables; i.e. 1 is intensity, 2 is pressure, and 3 is temperature. The formula states that a change in cosmic ray intensity equals a change in barometric pressure multiplied by the unknown, gamma. From this the following formula evolves:

$$R_{12} = \frac{\sum_{i=1}^{m} X \; Y}{\sum_{i=1}^{m} Y^2}$$

The sum of the products of the deviations of intensity and pressure for each day are divided by the sum of the squared deviations of pressure to obtain the correlation between intensity and pressure, or R_{12}, with X equalling the deviations of cosmic ray intensity and Y equalling the deviations of barometric pressure for each day from the mean. The result I obtained for R_{12} is then substituted in the following formula:

$$R_{12.3} = \frac{R_{12} - R_{13} \; R_{23}}{\sqrt{1 - R_{13}^2}\sqrt{1 - R_{23}^2}}$$

This result, $R_{12.3}$, is the correlation between intensity and pressure showing the influence of the third variable, temperature, i.e. the barometric coefficient. For my result I arrived at -3.8 which agrees closely with the results obtained by others.

I then proceeded to calculate the temperature coefficient, which is done in a similar manner using the same formulas except for the final calculation. $R_{13.2}$ is calculated from the following:

$$R_{13.2} = \frac{R_{13} - R_{12} \; R_{23}}{\sqrt{1 - R_{12}^2}\sqrt{1 - R_{23}^2}}$$

This result, the % intensity change / degree centigrade, is the temperature coefficient. I obtained the daily temperature from the U. S. Weather Bureau to insure greater accuracy. The final result of these calculations was - 0.0302. Therefore, I conclude that changes in temperature and barometric pressure have an inverse effect on the intensity of the background count.

# # #

CHECK YOUR CALENDAR FOR THE NEXT ANNUAL MEETING AT
WISCONSIN STATE COLLEGE, PLATTEVILLE
FEATURING THE DRIFTLESS AREA IN WISCONSIN
MAY 2-3, 1959

In Memoriam

George S. Bryan

1879-1958

GEORGE SMITH BRYAN was born in Charleston, S. Carolina on May 2, 1879 and died in Madison, March 5, 1958. His ancestors had been South Carolina Low Country residents since the 17th and 18th centuries. He attended secondary schools in Greenville and then Furman University, receiving the A.B. degree in 1900. After a decade of service in the secondary schools of his native state, he began graduate work in botany at the University of Chicago. Receiving the Ph.D. degree summa cum laude in 1914, he came to the UW as an instructor. In 1917 his academic career was interrupted by the war, but in 1919 he returned and by 1927 he had risen to full professorship. He served as chairman of the Botany Department from 1943 to 1948.

Prof. Bryan was a superb teacher. Few students in his large elementary classes failed to respond to his fine lectures, but perhaps he was at his best in leading classes on field expeditions. The textbook of general botany of which he was co-author has been used in scores of colleges and universities. His administrative ability was revealed in many ways. As department chairman, he showed the strength of his convictions and the breadth of his tolerance. One of the few things he could not understand was the lack of human understanding in others.

His special botanical interests were in the higher Cryptogams and the Gymnosperms. After retirement in 1949 he devoted much time to research and from this effort three of his best scientific contributions emerged. He was also a profound student of botanical history, a theme which he developed in one of his favorite courses.

Throughout his life he was an out-of-doors enthusiast. In 1923 he went on a scientific expedition to Peru under auspices of the Field Museum of Natural History and in 1927 to Tanganyika on a private expedition in company with Prof. R. J. ROARK. He was an ardent sportsman and a keen and observant naturalist, who took great satisfaction in obtaining good film records of plants and animals in their native habitats.

Prof. Bryan was a member of the AAAS, the Botanical Society of America, the S. Carolina Society of Colonial Wars, the Wisconsin Academy, Madison Literary Club and Getaway Club. He was elected to Phi Beta Kappa, Phi Sigma and Sigma Xi. The honorary degree Litt.D. was conferred upon him in 1946 by Furman University.
MEMORIAL COMMITTEE: Herbert J. Clarke, Richard I. Evans, Emma L. Fisk, Mark H. Ingraham, Raymond J. Roark, Henry R. Trumbower, Myron P. Backus, Chairman. # # #

In Memoriam

Paul A. Lawrence - 1889-1958

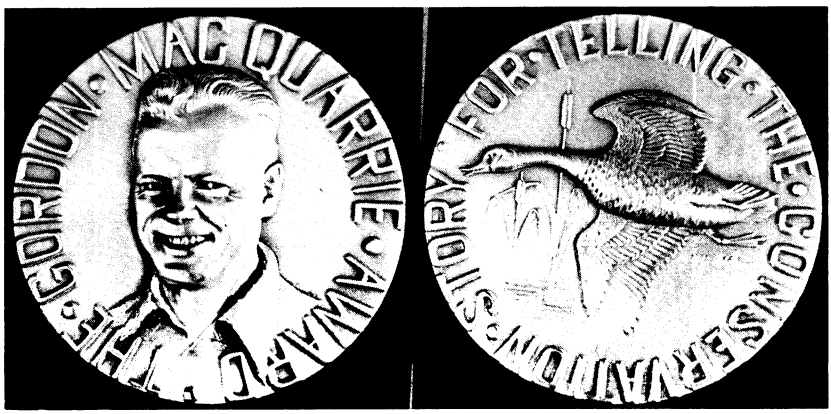
PAUL ANTHONY LAWRENCE was born in the Town of Mosinee, Marathon County, Wisconsin, on September 22, 1889. He died at Wyalusing on May 16, 1958 a few months after he retired from his position as State Park Supervisor with the Wisconsin Conservation Department. He had worked approximately 40 years for the Department over a period of more than 44 years, starting on August 1, 1913. He was one of the state's pioneer conservationists, having graduated in 1914 from the first U.W. two-year course for forest rangers established by State Forester E. M. Griffith. He also secured two years of training in mathematics and drafting from the American School of Correspondence (Chicago).

After a few years of timber cruising and fire fighting for the old State Board of Forestry, Paul Lawrence was assigned the job of managing the old "Marquette" State Park now known as Wyalusing in Grant County. During the past 17 years he has been Supervisor of all State parks in this area including First Capitol near Belmont and Nelson Dewey (Stonefield) near Cassville.

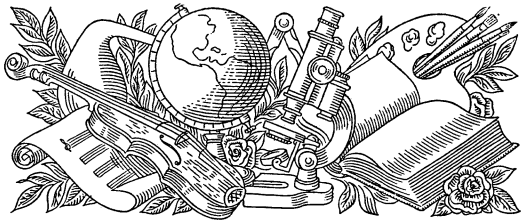
Among the many examples of his handiwork in these parks is a pine plantation over 40 years old at Wyalusing. But even more lasting will be the respect and confidence he earned as a citizen of this community and of Wisconsin. --- W.E.S.

# # #

MEDAL AWARDED BY GORDON MacQUARRIE FOUNDATION



This June at the Wisconsin Conservation Congress annual meeting the first Gordon MacQuarrie Foundation award medal was presented to Academy member R. G. LYNCH of the Milwaukee Journal by Committee of Judges Chairman CLARENCE A. SCHOENFELD. Officers of the Foundation who are also Academy members are WALTER E. SCOTT (Pres.), HARRY NOHR (V-P), MRS. GORDON MacQUARRIE (Sec'y), and W.J.P. ABERG (Treas.) Medallion sculpture by Dick Wiken, Milwaukee.



STATE AND ACADEMY NEWS

THE ACADEMY'S 88TH ANNUAL MEETING

(Whitewater, May 3-4, 1958)

By Francis D. Hole, Sec'y-Treas.

Convening in the new Administration-Library Building at Wisconsin State College, Whitewater, the 88th Annual meeting of the Wisconsin Academy was held on May 3, 1958. Twenty-five papers were presented at three separate sessions in the morning and the afternoon was given to a symposium on the Kettle Moraine area. Seven speakers helped members familiarize themselves with the area which was to be toured on the field trip the following day. About 120 persons registered. Junior Academy sessions were held in Lucy Baker Hall where 16 papers were presented.

Following the late afternoon business meeting, a well-attended reception was held in the Exhibit Room of the Library, where art of the Kettle Moraine both by professional and student artists was displayed. The Annual Dinner at the Country Club honored HUGO W. ROHDE, Academy member of longest standing, with almost 140 in attendance. As toastmaster, WALTER SCOTT introduced President ROBERT C. WILLIAMS of the State College, who expressed a welcome to both Senior and Junior Academy members. ROY J. CHRISTOPH announced winners of the Wisconsin Science Talent Search and presented JANE KARAU, winner of the Wisconsin portion of the Westinghouse Science Talent Search. The Presidential Address by Rev. RAYMOND H. REIS, S.J. told of a Study in Human Genetics. The evening ended on an entertaining note as JOSEPH J. CHOPP discussed Science and Magic and gave many "demonstrations."

Over 100 people participated in the guided bus tour of the Kettle Moraine on Sunday, May 4. Prof. WARREN C. FISCHER was tour leader and EMIL P. KRUSCHKE, botany leader. The Academy was pleased to have a veteran reporter of the Milwaukee Journal, Academy member LEWIS C. FRENCH, present during all sessions and his stories were augmented later by a three-page feature on the field trip in the Rotogravure Section.

Annual Business Meeting

The Annual Business Meeting was called to order at 4 p.m. in the Audio-Visual Room of the Administration Building. An amendment to the Constitution, providing for a president-elect, was read by the President, Rev. RAYMOND H. REIS, and unanimously approved by the approximately 60 members attending. Also unanimously approved was an increase in active membership dues to $4 and family membership to $5. Treasurer HOLE presented a summary of his report to the Council, explaining that although the present outlook is for a deficit of $2,000 during the next 11 months, as of April 1, 1958 the Academy had a balance of $2,000. The report was accepted. Mr. HOLE as Chairman of the Nominating Committee, read the slate of officers proposed for election and a unanimous ballot in favor was cast. Editor of the TRANSACTIONS, JAMES A.

LARSEN, will be unable to serve due to a research travel and study program and it was agreed that the President should appoint a successor. (New officers' names appear inside back cover.) Eight resolutions were presented by Chairman SCOTT of the Resolutions Committee and approved (see below).

Report of the Publications Committee was read by Mr. SCOTT, who urged that proposals by Mr. LARSEN be read and considered by members. The meeting was then turned over to the new president, ROBERT J. DICKE.

Former President KOWALKE noted that in a recent list of organizations existing in Wisconsin that the Academy was listed as a professional group on a par with organizations of dentists or the like. This is an improper listing as the Academy is not a self-taxing group in the sense in which a professional group is. Rather, like the Wisconsin Historical Society, we are a public group giving important service to all the people of the state.

Meeting adjourned about 5 p.m.

RESOLUTIONS

I.

WHEREAS: The Wisconsin Academy of Sciences, Arts and Letters has lost in death nine of its distinguished members during the year 1957-58, and

WHEREAS: The Academy wishes to recognize its indebtedness for their inspiration, devotion, and leadership,

BE IT RESOLVED: That the Wisconsin Academy of Sciences, Arts and Letters herewith express its lasting appreciation for service given throughout the years by

GEORGE S. BRYAN	GORDON KUMMER	WILLIAM N. SMITH
JOSEPH C. FORD	EDWARD D. REYNOLDS	ARLOW B. STOUT
HUGH D. INGERSOLL	MARVIN B. ROSENBERRY	WALTER R. SYLVESTER

BE IT FURTHER RESOLVED: That a copy of this Resolution be inscribed in the official minutes of the organization.

II.

WHEREAS: The Wisconsin Academy of Sciences, Arts and Letters has enjoyed a successful 88th Annual Meeting at Wisconsin State College--Whitewater,

BE IT RESOLVED: That the Secretary be instructed to express our appreciation and thanks to our colleagues of Wisconsin State College--Whitewater and its administration for their generous hospitality and enthusiastic assistance.

III.

WHEREAS: The program of the 88th Annual Meeting is one of the most efficiently planned in the Academy's history,

BE IT RESOLVED: That the members extend their appreciation to the Program Committee and especially to the general chairman, KATHERINE G. NELSON and the chairman of local activities, HENRY MEYER, and that the symposium idea inaugurated be continued at future meetings.

IV.

WHEREAS: The Wisconsin section of the American Chemical Society completed its 50th year of service in 1957 and many of its members likewise are affiliated with the Academy,

BE IT RESOLVED: That the Wisconsin Academy extend to its colleagues in science its congratulations and best wishes for continued success and future helpfulness to mankind.

V.

WHEREAS: The Milwaukee section of the American Chemical Society is celebrating its Golden Anniversary this year and this organ-

ization has been affiliated with the Wisconsin Academy through many of its members over this half century of significant service to the profession,

BE IT RESOLVED: That the Secretary transmit to their officers the Wisconsin Academy's respects and best wishes for their second half century of progress and accomplishments for the welfare of mankind.

VI.

WHEREAS: The Junior Academy of Science sponsored by the Wisconsin Academy of Sciences, Arts and Letters this past year has received financial contributions important to the support of this vital program to encourage young scientists from the following individuals and groups

A. O. SMITH CORPORATION	ED. DROTT, JR.
ALLIS CHALMERS CORPORATION	OTTO L. KOWALKE
C. M. GOETHE	H. S. DAY, WIS.TELEPHONE CO.
MARATHON DIV. of AMER. CAN CO.	NICOLET HIGH SCHOOL, Milwaukee
WAUSAU PAPER MILLS	

BE IT RESOLVED: That the Secretary transmit a copy of this resolution to each of these individuals and groups to express our appreciation for their support to one of the Wisconsin Academy's most significant programs fundamental to our Nation's future.

VII.

WHEREAS: HUGO W. ROHDE has been a member of the Wisconsin Academy continuously for 60 years, longer than any other living member, affiliating with the organization in 1898 before he graduated from the University of Wisconsin, and being elected to Life Membership in 1947, and

WHEREAS: He has distinguished himself in the profession of chemistry and otherwise has earned the respect and veneration of his colleagues,

BE IT RESOLVED: That the Wisconsin Academy of Sciences, Arts and Letters elect him this day to Honorary Life Membership and present to him a certificate expressing this recognition.

VIII.

WHEREAS: the 90th Anniversary of the Wisconsin Academy will be celebrated in 1960 and special effort should be taken to recognize this historic occasion,

BE IT RESOLVED: that the annual meeting be held in Madison at the University's Wisconsin Center Building and arrangements be made to return to this location of the Wisconsin Academy's first meeting.

Council Meeting

Ten Council members, the TRANSACTIONS editor and chairman of the Junior Academy met at the Green Shutters in Whitewater on the evening of May 2, 1958. Gifts to the Junior Academy amounting to $235 from H. S. DAY (Wis. Telephone Co.), WAUSAU PAPER MILLS FOUNDATION, ED. DROTT, JR., ALLIS CHALMERS CORP., MARATHON DIV. AMERICAN CAN CO., O. L. KOWALKE, and A. O. SMITH CORP. were accepted, as was $22.53 from Mr. KOWALKE to the Senior Academy General Fund. Approximately 150 applicants for membership were accepted. (See list on inside back cover). Letters of thanks from recently elected honorary life members were displayed by the Secretary. The Nominating Committee's report was approved, after noting that Mr. LARSEN would be unable to act as TRANSACTIONS Editor after May 4, and the distributor of separates is not an officer. It was suggested that the next nominating committee be instructed to select the next president-elect from the humanities. An amendment to the Constitution was proposed for action in 1959 that the two editors be official members of the Council. A suggestion that the number of

past-presidents on the Council be limited was tabled. Approved for submission to the Annual Meeting, proper circularization having been made, was a constitutional amendment revising the first sentence of Article IV to read as follows: "The officers of the Academy shall be a president, a president-elect, a vice-president for each of the three departments, sciences, arts, and letters, a secretary, a librarian, and a treasurer." (See Summer 1954 Academy Review, p. 43, for Constitution).

Allowances for various duties performed for the Academy were approved as follows: Secretary-Treasurer $500; Editor of the Review $300; Editor of the TRANSACTIONS $200; Typist of the Review $50 per issue. The Council continued to support the proposal to raise dues from $3 to $4 for active members and from $4 to $5 for family memberships, with approval to be sought at the Annual Business Meeting. A report of Mr. DICKE on the $30,000 annual budget of the Minnesota Academy was read, and discussion held on further surveys in other states and presenting the Wisconsin Academy's case to appropriate foundations.

The possibility of combining Academy meetings with those of other scientific, art or literary groups is to be considered by a committee. Appreciation of the fine work of Chairman GODER, Mr. KOWALKE and other members of the membership committee and by Mr. CHOPP was expressed. Mrs. NELSON, Mr. MEYER and other members working on the program were commended, and thanks was voted to the Wisconsin State College faculty and staff for their assistance. Growth of the Junior Academy was reported by Mr. THOMSON and the Council approved underwriting expenses involved in increasing to 18 the papers read at Annual Meetings, as well as the added prizes.

Mr. LARSEN distributed a list of papers already received for the TRANSACTIONS and also a proposal for a revised publication policy to incorporate the Review with the TRANSACTIONS on a quarterly basis. A committee is to be appointed to secure a successor to Mr. LARSEN and to study and take steps regarding future form of Academy publications. Mr. SCOTT reported on the Review and outlined the forthcoming issue. As Librarian he reported that he has begun offering almost complete sets of the TRANSACTIONS free to Wisconsin libraries wishing them. A proposed written agreement with the University will be made ready for consideration at the fall Council meeting. A new program committee to be appointed will plan the Platteville (first Saturday in May 1959), Madison (1960) and 1961 meetings.

An Honorary Life Membership Certificate will be prepared to present to Mr. ROHDE at the Annual Banquet on May 3. Meeting adjourned at 9:45 p.m.

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ANNUAL WISCONSIN SCIENCE TALENT SEARCH

The Tenth Science Talent Search in Wisconsin brought 89 entrants, from which 12 winners were selected on the basis of their high school academic record, performance on a science aptitude test, and the completion of a science project. Top winner was JANE KARAU of Columbus High, Marshfield, who has a choice of a 4-year tuition scholarship at Marquette University, or a $100 cash scholarship award to any college of her choice. PRISCILLA PESTKA of Mary D. Bradford High, Kenosha, was named alternate for the $100 award, should Miss Karau not choose it. DANIEL GOLLNICK of La Crosse Central High won the other $100 cash scholarship. Winners and their science projects are:

Elliot R. Dreger RR 3, Box 225, Kenosha
"Halogen Anion Analysis"

Daniel Gollnick 4012 Glenhaven drive, La Crosse
"Effect of Natural Phenomena on Cosmic Ray Intensity"
Jane R. Karau 510 W. 6th st., Marshfield
"Natural Dyes for Home Use"
David E. Kullman 7525 21st ave., Kenosha
"Corrosion Inhibitors"
Caryl Ann Milkowski 7024 39th ave., Kenosha
"Prejudice Determination by the Use of Jokes"
Clarence R. Netwal 1310 S. 29th st., La Crosse
"Two Unusual Uses of Light"
Peter C. Owzarski, Jr. 206 Yawkey st., Rothschild
"Experiences with Rocket Fuels"
Samuel F. Pellicori 2416 50th st., Kenosha
"Growth of Crystalline Solids in a Magnetic Field"
Priscilla A. Pestka 7010 30th ave., Kenosha
"Plant Rooting Media"
Ronald S. Saunders 540 Elmside Blvd., Madison 4
"Anti-Bubbles and the Thickness of Air Films"
Henry E. Thompson 2114 16th st., Racine
"Dial the Answer"
Jacqueline J. Werner 2122 N. 7th st., Sheboygan
"A Study of Fractional Derivatives of y = f(x)"

Judges for the 1958 Search included: JESSE M. CASKEY (Northland College), RALPH C. HUFFER (Beloit College); J. B. GREENE (Marquette U.); DANIEL Q. THOMPSON (Ripon College), ROBERT M. ROSENBERG (Lawrence College), FRANCES W. JONES (Milwaukee-Downer), L. A. FRASER (UW), ROY J. CHRISTOPH (Carroll College).

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NEWS NOTE FROM BELOIT COLLEGE

(Submitted by Prof. Carl Welty)

PAUL W. BOUTWELL, professor emeritus of chemistry at Beloit College, was honored June 12 as "one of America's outstanding teachers in the field of undergraduate chemistry." Named as one of six to receive awards of $1,000 each under the Manufacturing Chemist's association 1958 College Chemistry Teacher awards program, his special field is agricultural chemistry and nutrition. The awards are made to teachers "personally responsible over a period of years for inspiring and holding the interest of students in the field of chemistry." Many of Prof. Boutwell's former Beloit students have gone on to prominence in science research, teaching and business fields. Presentation of the awards was made at the 86th annual meeting of the association at White Sulphur Springs, W. Va. Beloit President MILLER UPTON said, "Beloit is indeed proud that a member of its faculty has been selected for this honor. Dr. Boutwell wonderfully symbolized the great teacher so vitally needed in America today. His teaching has been an inspiration to generations of Beloit students!"

Prof. Boutwell retired as chairman of Beloit's chemistry department in 1953 after 32 years as head of the department. In subsequent years he has taught occasional courses at the college and also served as a research consultant to the Adams corporation in Beloit. A native of Lyndeborough, N.H., he attended Beloit Academy before entering the college. He graduated in 1910 with Phi Beta Kappa honors, and then received his master's and Ph.D. degrees from the University of Wisconsin.

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NEWS ABOUT THE UNIVERSITY OF WISCONSIN
(Prepared by U. W. News Service)

The University of Wisconsin-Milwaukee awarded an honorary LL.D. degree to FRANK P. ZEIDLER, mayor of Milwaukee, at commencement June 13. ... A joint faculty-student committee will undertake a year-long study (to May 1959) of academic standards at the University following presentation of a petition for higher standards signed by almost 200 students. ... The Benjamin Smith Reynolds Award for excellence in teaching of engineers was presented to Prof. JACOB KOREVAAR, mathematics, and the Kiekhofer Memorial Teaching Award to an outstanding young faculty member was presented to Prof. WAYNE B. SWFIT, electrical engineering. Both awards are $1,000. ... University regents have appointed Prof. FRED H. HARRINGTON, distinguished historian now special assistant to the president, as vice president-academic affairs. Former vice-president of academic affairs, IRA L. BALDWIN, assumes new duties as special assistant to the president and will continue for a year his important work with the Coordinating Committee for Higher Education and UW-Milwaukee.

University regents have appointed JOHN E. WILLARD, internationally-famed UW chemist, as Dean of the Graduate School. He succeeds Dean C. A. ELVEHJEM, new president of the UW. ... University regents have approved establishment of a unique Institute for Research in the Humanities, beginning in September, 1959, with a core of three professorships. ... University stations WHA and WHA-TV won four citations in the 22nd American Exhibition of Educational Radio and Television programs at Columbus, Ohio, in May. ... The University has become probably the first among non-sectarian colleges and universities to inaugurate training of teachers for instruction in the Hebrew language. ... The UW conferred its first M.F.A. degrees at the June commencement on JOHN FRASE of Madison and DAVID PEASE of Streator, Ill. ... Regents have scrapped plans for a consolidated Law-Sociology Building, and allotted $1,660,000 for a new wing on the Social Studies Building to house departments of sociology, anthropology, and economics, plus $645,000 for an addition to the Law Library. ... The Executive Committee of the regents has awarded $1,500,000 in contracts for a research addition to Service Memorial Institutes at the UW Medical School and the board has approved preliminary plans for a $2 million Science Building on the UW-M campus.

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NEWS ABOUT MARQUETTE UNIVERSITY
(Collected w/ assistance of Prof. SCOTT L. KITTSLEY, Review Reporter)

Marquette is one of the 25 colleges and universities forming a corporation to be called "Associated Midwest Universities" with headquarters at Argonne National Laboratories near Lamont, Illinois. It is expected this will not only facilitate research in physics but also assist significantly in the teaching program. ... A record class of 1,238 seniors received their degrees at the June 8 commencement. Besides an honorary Doctor of Laws degree conferred on LUDWIG ERHARD, Germany's federal minister of economics and deputy to the vice-chancellor, an honorary Doctor of Science degree was presented to Academy member Dr. WILLIAM S. MIDDLETON, chief medical director of the Veteran's Administration and former dean of the UW Medical School. ... On June 18-20 the American Physical Society met for the first time in Milwaukee on invitation from Marquette Univ. and the Milwaukee Physics Club. ... Both Professors JOHN G. SURAK and SCOTT L. KITTSLEY presented papers in April at the Amer. Chemical Society's San Francisco meeting. (continued on page 144)

TREASURER'S REPORT

(April 1, 1958)

RECEIPTS

Carried forward from the Treasury, April 1, 1957:		
Checking Account		$ 843.37
Savings Account		1,413.64
Assets invested in U. S. Govt. Bonds*		400.00
Cash on hand		9.90
Carried over from State Appropriations for publishing TRANSACTIONS		2,500.00
		$ 5,166.91
Receipts from Membership:		
Active, Library and Sustaining members		$ 2,661.25
Contributions:		
To General Fund, from Messrs. R. Prussak, R. W. Stubbe, I.H. Wiseman, D.K. Akers, Duncan Stewart of Barber O.Colman Co., O. L. Kowalke	$ 47.35	
To Endowment Fund, from Messrs. R.N. Buckstaff, W. J. Kohler, E.J.B. and Mrs. Schubring	375.00	
	$ 422.35	
Junior Academy of Science		
Contributions from Koerper Engineering Assoc., N.S. Stone, Wausau Paper Mills, Ed. Drott, Jr., Murco Foundation, Marathon Corp., Wausau Iron Works and C. M. Goethe	$ 220.00	
Dues	14.00	
Sale of Pins	18.90	
AAAS research grants	98.22	
	$ 351.12	
Receipts from maturity of Bond (endowment: U.S. Coupon Bond 1692B)		$ 1,000.00
Receipts from Interest		
On Endowment	63.08	
On Savings	37.35	
	$ 100.43	
Receipts from the State of Wisconsin for publication of the TRANSACTIONS, Appropriation, 1957-58		$ 3,000.00
Receipts from Sale of Publications		
Reprints from TRANSACTIONS, Vols. 45 & 46	$ 484.19	
Back volumes	356.15	
Separates	73.07	
Copies of Academy Review	9.25	
	$ 922.66	
TOTAL RECEIPTS		$13,624.72

DISBURSEMENTS

Cost of Publication:		
TRANSACTIONS: Vol. 45	$2,500.00	
Vol. 46	3,617.00	$ 6,117.00
Academy Review (4 issues)		1,266.28
		$ 7,383.28
Expenses of Annual meetings		119.00

DISBURSEMENTS - Continued

Junior Academy of Science		
Prizes	230.70	
Travel expenses, students	58.70	
Research grants in advance	103.72	
Tuition Scholarships	200.00	
Test Tube Times	46.00	$ 639.12
Operating Expenses		
Secretarial allowance ($300) and to business service companies and other part-time clerical help		$ 502.29
Allowance to Editor of Academy Review		200.00
Supplies		218.75
Safety Deposit Box rental		4.50
Postage		281.64
		$ 1,207.18
Dues to A.A.A.S. Conference		8.50
Investment of endowment funds		1,500.00
TOTAL DISBURSEMENTS		$10,857.08

Balance on Hand, April 1, 1958		
Checking Account	224.43	
Savings Account	1,128.49	
Assets invested in U.S.Govt.Bonds*	400.00	
Cash on hand	14.72	
Carried over from State Appropriation for publishing TRANSACTIONS	1,000.00	2,767.64
		$13,624.72

ENDOWMENTS AND ASSETS

1.	U.S. Savings Bonds (3) Registered Series G	$ 1,200.00
2.	U.S. Savings Bonds (2) Series F	1,500.00*
3.	U.S. Savings Bonds (11) Series G	1,100.00*
4.	U.S. Savings Bonds (4) Series J	575.00*
5.	U.S. Savings Bonds (2) Series E	2,000.00*
6.	76 shares Mass. Investors Trust ($10.49)	797.24
	Total Amount Endowment	$ 7,172.24
7.	U.S. Savings Bonds (Current Assets) (4) Series G	400.00*

* - Value at maturity

/s/ Francis D. Hole
Francis D. Hole
Secretary-Treasurer

# # #

THE BOOKSHELF

SORRY!

Crowded out;
See next issue.

NEW MEMBERS

(Continued from inside back cover)

Family: H. L. and JULIE M. ANDERSON, Wakefield, Mich.
J. M. and CONSTANCE CONRADER, Oconomowoc
Dr. and Mrs. R. B. DRYER, Poynette
JOHN W. and ELIZABETH GEHLER, Watertown
MALCOLM D. and CAROLEE JENDRESEN, Milwaukee
ODELL and HAZEL TALIAFERRO, Madison
Mr. and Mrs. L. M. VAN HORN, Milton
CLARENCE C. and GLADYS WIEGERT, Ft. Atkinson
J. D. and BARBARA WORKMAN, Madison

Active:

J. H. AINSWORTH, Kaukauna
MARVIN T. BEATTY, Madison
EUNICE R. BONOW, Milwaukee
ROBERT P. BREITENBACH, Milwaukee
WILLIAM D. BURDICK, Milton
BRUCE R. CURLER, Milton
DUANE M. CUTTING, Delavan
JOHN O. DANIELSON, Superior
CHARLES R. FORKER, Madison
EDMUND W. GIFFORD, Milwaukee
RONALD H. H. HANSEN, Racine
A. C. HORNBOSTEL, Edgerton
LAWRENCE JOHNSON, Middlebury, Ind.
WILLIAM C. PAYNE, Janesville
RICHARD H. PFEIL, Elkhorn
ALMA H. PRUCHA, Milwaukee
AGNES RISETTER, Sparta
NELSON P. ROSS, Racine
WILLIAM P. SHEAFFER, Madison
PHILIP W. SMITH, Middleton
M. N. TAYLOR, Merrill
JAMES R. WALLIN, Eau Claire
RAY WEBER, Antigo
A. VINCENT WEBER, La Crosse
JANE H. WILDE, Eureka, Ill.
ELIAHU WURMAN, River Falls

Applications received since the Council meeting are:

Life: CHARLES D. GELATT, La Crosse

Family: VIC and ELLEN F. MATOUSEK, Delavan
ALLEN A. and JEANETTE WANGEMANN, Sheboygan
Mr. and Mrs. W. H. WEBER, Stoughton
Mrs. CYRIL C. O'BRIEN, Milwaukee (he is a member)

Active:

RALPH M. ADERMAN, Milwaukee
THOMAS N. BOBB, Ashland
THOMAS C. BUTTS, Plainfield
STITH MALONE CAIN, Whitewater
DONALD W. CARTER, Lake Geneva
ROBERT S. DeVOY, Madison
Col. W.G. HOAR, Ret'd., Shell Lake
KENNETH KINGERY, Stoughton
MARTIN LAAKSO, River Falls
LEROY J. LINTEREUR, Marinette
CLARK T. MILLER, Racine
Mrs. LAVORA L. PETAK, Whitewater
JACK W. POWERS, Ripon
ROBERT E. SHOWERS, Jr., Green Bay
ROLAND TRYTTEN, Stevens Point
RAPHAEL D. WAGNER, Madison
ROBERT J. WILLIAMS, Madison

Library: MILWAUKEE SCHOOL OF ENGINEERING, Milwaukee

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State and Academy News - Continued from page 141

Top award of the SE Wisconsin Science Fair co-sponsored by Marquette Univ. and the Milwaukee Journal--a 4-year scholarship valued at $2,600--went to ANTHONY T. DREW of Notre Dame High (Milwaukee) for an exhibit on the psychological breeding of pigeons.

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NEWS FROM RIPON COLLEGE - Academy Life member WILLIAM HARLEY BARBER, Emeritus Professor of Physics of Ripon, was granted the Honorary Degree of Doctor of Science for his outstanding work as a physics teacher there.

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PROFESSOR FRANCIS D. HOLE of the U.W. Soils Department served the Wisconsin Academy efficiently and faithfully as Secretary-Treasurer the past two fiscal years. He has well earned this brief statement of commendation and appreciation.

NEW MEMBERS

Enthusiastic Whitewater citizens account for the following Family Memberships:

HOWARD A. and BARBARA BARNETT
ALBERT and AMELIA BARTY
MADELINE CHOPP (he is a member)
E. S. and REGINA COE
RAYMOND and ROMAYNE COOK
ROBERT C. and SALLY DeBAUFER
VIRGIL C. and ORPHA GRAHAM
Mr. and Mrs. K. M. HACKETT
THOMAS G. and JUDY HARTLEY
DAVID L. and LOLITA KACHEL
Dr. and Mrs. ROBERT KOENITZER
RAYMOND E. and ZENOBIA LIGHT
DAN and BETTE McNAMARA
WILLIAM H. and PHYLLIS MASTERSON
Dr. and Mrs. DELMAR C. MESKE
MILTON F. and ESTHER NEHRBASS
Dr. and Mrs. LAWRENCE F. NELSON
WESLEY I. and WAVAJEAN NELSON
GORDON W. and MARGARET RILEY
EARL and BESS ROGER
MAX and VIRGINIA SALSKE
I. W. and KATE SCHAFFER
Dr. and Mrs. ERWIN O. SCHIMMEL
MATT and ROSE SCHMITT
Dr. and Mrs. FRANK W. SCHNEIDER
JAMES and JOANNE STARK
JAMES W. and SOPHIA UNDERWOOD
CARL E. and ARLENE WATSON
C. O. and OPAL WELLS
EVERETT and BARBARA WHITE
ALVIN and VIRGINIA WUTTI

and Active Members:

JOHN A. BOSSHARD
RICHARD CAIRD
HERBERT W. CHAPMAN
EARL COX
JAMES H. CRUMMEY
CLAY J. DAGGETT
RUSSELL B. EVERHARDT
FIRST CITIZENS STATE BANK
CARROLL E. FLANAGAN
DONALD F. GROSINSKE
WILLIAM L. HALL
JOHN J. HOLFORD
LYLE HUNTER
CARL D. JOHNSON
MICHAEL J. KENNEDY
REUBEN W. KLUMB
EDWARD J. MORGAN
KATHLEEN MYSZEWSKI
LEO PERRY
WALTER PETERSON
FRED M. RITZMAN
DAVID B. SAUNDERS
NORMAN THIES
CARL J. VANDERLIN
ROBERT C. WILLIAMS

and Active Members who are students at Whitewater:

MARVEL CALVERT, Benton
DONNA GENTES, Kenosha
VERNE GILLES, Ashland
JANICE GREENWOOD, Wauwatosa
RONALD L. LAMBERTON, Racine
ROBERT D. MEERSCHAERT, Cudahy
FRANK J. MOLL, Stoughton
JOAN SEVERSON, Monroe
WILLIAM L. SIGMUND, Elkhorn
JOHN P. VanSLYKE, Black Earth
ROBERT E. WILBER, Elkhorn

New Member list continued on page 144

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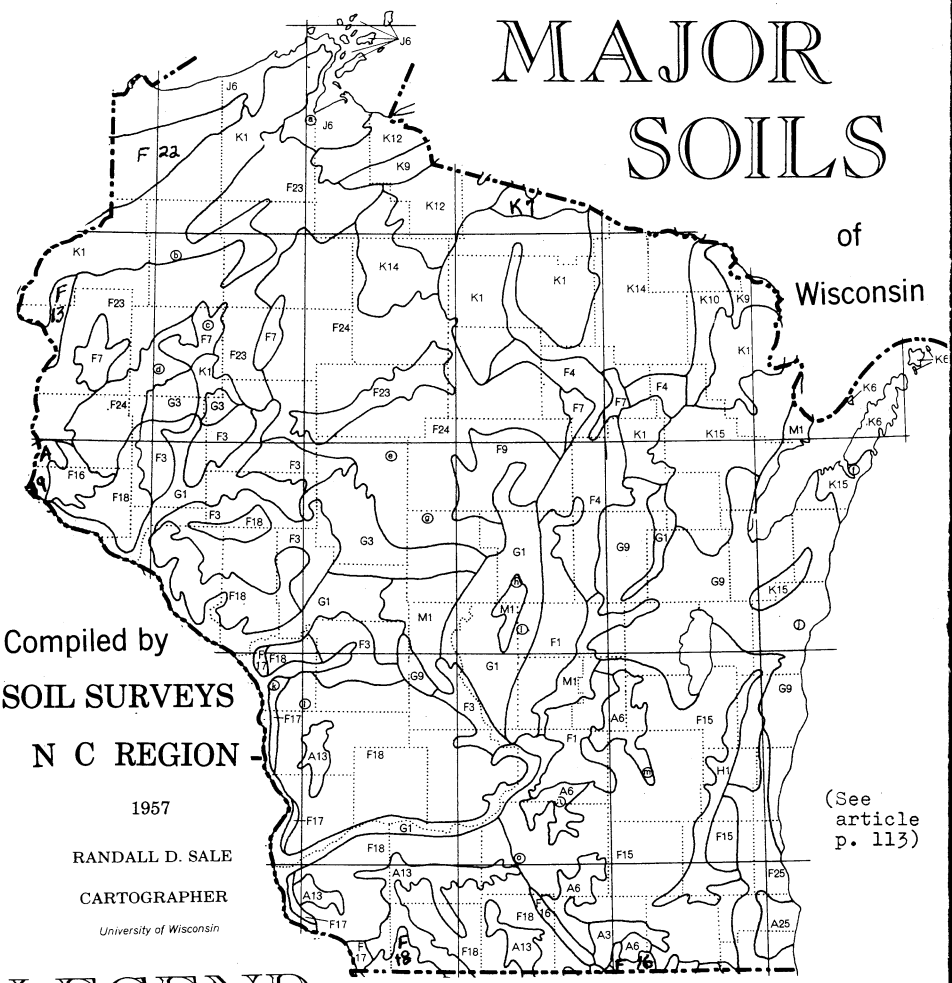
OFFICERS OF THE WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS

PRESIDENT: Robert J. Dicke, King Hall, Univ. of Wis., Madison
PRESIDENT-ELECT: Henry Meyer, Wis. State College, Whitewater
VICE-PRESIDENTS: Sciences: Roy J. Christoph, Carroll College, Waukesha; Arts: Cyril C. O'Brien, Marquette Univ., Milwaukee; Letters: Haskell M. Block, Univ. of Wis., Madison
LIBRARIAN: Walter E. Scott, Madison
SECRETARY-TREASURER: Roger E. Schwenn, Univ. of Wis., Madison
THE COUNCIL: The above-listed officers and the Past-Presidents: Paul W. Boutwell, A. W. Schorger, H. A. Schuette, L. E. Noland, Otto L. Kowalke, W. C. McKern, E. L. Bolender, Katherine G. Nelson, C. L. Fluke, Ralph N. Buckstaff, Joseph G. Baier, Jr., Stephen F. Darling and Rev. Raymond H. Reis, S. J.
COMMITTEES: Publications: The President and Secretary, ex officio, and the Editor of the TRANSACTIONS
Membership: Harold A. Goder, Chairman, Berenice Cooper, Otto L. Kowalke, Fred Kaufmann, John F. Vozza, and Frederick W. Hainer
REPRESENTATIVE ON COUNCIL OF A.A.A.S.: Stephen F. Darling, Appleton
CHAIRMAN, JUNIOR ACADEMY OF SCIENCE: John W. Thomson, U. W.
EDITOR, WISCONSIN ACADEMY REVIEW: Walter E. Scott, Madison
EXCHANGE LIBRARIAN: Miss Laurel Nelson, Memorial Library, UW

MAJOR SOILS of Wisconsin



Compiled by

SOIL SURVEYS

N C REGION -

1957

RANDALL D. SALE

CARTOGRAPHER

University of Wisconsin

(See article p. 113)

LEGEND

A3 Warsaw-Ringwood-Plano

A6 Saybrook-Parr-Drummer

A19 Kenyon-Floyd-Clyde

A25 Elliott-Ashkum

F1 Coloma-Plainfield

F3 Hixton-Boone

F4 Kennan-Omega

F7 Antigo-Onamia

F9 Marathon-Fenwood

F13 Hayden-Bluffton

F15 Miami-Dodge-Conover

F16 Birkbeck-Pecatonica-Russell

F17 Fayette-Seaton

F18 Fayette-Dubuque-steep rocky land

F22 Milaca-Hibbing

F23 Milaca-Santiago

F24 Almena-Spencer-Freer

F25 St. Clair-Blount-Pewamo

G1 Plainfield-Granby-Zimmerman

G3 Hixton-Arland-Vesper

G9 Kewaunee-Oshkosh-Poygan

H1 Casco-Rodman-Fox

J6 Ontonagon-Pickford-Bergland

K1 Rubicon-Vilas-Grayling

K6 Longrie-St. Ignace-Moran

K7 Marenisco-Munising-Hiawatha

K9 Goodman-Gogebic-rock knobs

K10 Gogebic-Trenary-Hiawatha

K12 Wakefield-Gogebic

K14 Goodman-Iron River

K15 Onaway-Emmet-Guelph

M1 Roscommon-Au Gres-peat