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WISCONSIN ACADEMY REVIEW

Vol. 2 Fall, 1955 No. 4

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WISCONSIN ACADEMY REVIEW

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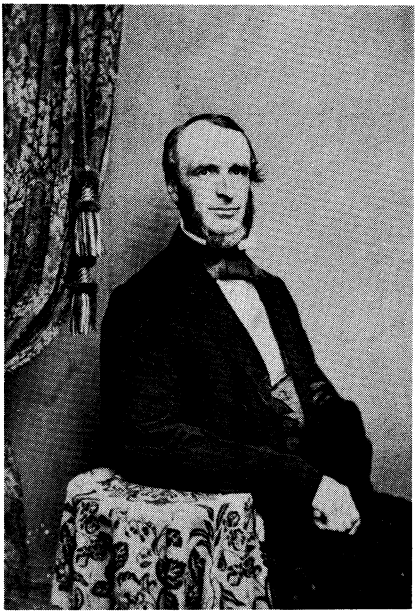
BE SURE TO MARK YOUR CALENDAR FOR MAY 4 & 5, 1956—
86th ANNUAL ACADEMY MEETING AT MARQUETTE UNIVERSITY, MILWAUKEE



JOSEPH EMERSON
ca 1860
Union Gallery, Beloit, Wis.
By Layton & Barnes

AN IMPRESSION OF THE SOO: 1849

By Robert H. Irrmann
Department of History
Beloit College

Beloit College, chartered by the Territorial Legislature in February of 1846, received its first class of four students in November, 1847, and committed this class to the tutelage of Sereno T. Merrill of Beloit. Thus it was that Mr. Merrill was the first teacher in Beloit College, serving until the coming of the first two regular professors in May of 1848. One of these two was Joseph Emerson, a Yale graduate of the class of 1841, a classicist, and erstwhile tutor in Yale College. Arriving in Beloit in May 1848, he looked back on this initial experience some 15 months later, and reflected upon his labors in a letter to his mother:

"Our year closed last week, much to my relief, as I have not had any vacation since September last, on account of the difference in the time for vacation in the college & the preparatory department. ... During the latter part of the year too the labor has been as you know rather severe requiring...hours labor a day in hearing recitations or study in reference to daily exercises. ... I expect to start next week for the Lake - thence by Steamboat up the Lake to Mackinaw - ..." In truth Emerson went far beyond Mackinaw - to the Soo and even on into the copper country of the Keweenaw peninsula. His journal of that vacation trip gives us a view of this region as it looked 106 years ago, six years before the opening of the locks at the Soo, this year celebrating their first century of service to Superior and other of the Great Lakes.

After a pleasing stop at Mackinac Island, Joseph Emerson went up the St. Mary's river, from whence he wrote his father: "If you wish to know where I am look in your books. As for pronunciation, it is as much like 'Susan marry' as anything." Here at Sault Ste. Marie, Emerson had several vividly recalled experiences, recounted in a letter to his parents of Mid-August, 1849, and expanded in his holograph journal:

"I am here in Ste. Marie house, just at the foot of the rapids. The river is toward a mile wide - the rapids are 3/4 mile long - and fall 22 feet in all, running among great boulders of trap and granite, which made the whole surface almost white with froth. Indians go into the rapids in their canoes and catch lake trout. I am waiting here for the Propeller Napoleon to go up the Lake Superior. She is now laying above the Saut (sic) discharging a load of native copper from Eagle River. You would be amazed to see the masses she brings of copper... But if I go up the Lake I may have more to say as to the copper. There is to be a payment of annuities to the Ojibwa indians at La Pointe, near the west end of the Lake, (by the isles of the Apostles) ... the boat is bound there. The agent who makes the payment is here with nothing to do so that I have an opportunity of making his acquaintance, of which I have been availing myself today. He took me up this afternoon to the Baptist Mission, which has been had for twenty years under Rev. Mr. Bingham. We saw Mr. B and his two daughters. They have a school now though it is small this week because the cholera was here last week and frightened the school away. This eve I went to Mr. B's prayer meeting - few were there but it was a pleasant meeting to me. I hope it is not leaving one's own to look out a baptist meeting when there are no presbyterians."

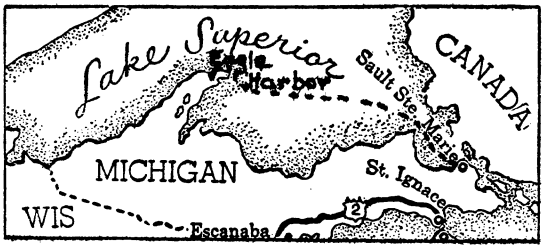
Joseph Emerson lingered in Sault Ste. Marie for three days more. The Napoleon did not sail on Saturday, for she was waiting for freight, and freight had to be portaged past the rapids of the St. Mary's. On Sunday Emerson thought it not quite necessary to travel on the Sabbath, and gave up the chance to sail with the Napoleon, and then half regretted it. His journal recounts that "on rising was informed that a traveler at the Van Andere House was taken with cholera at 10 last evening - dies at 3 this morning and was already buried. Found the wind from the east which would cut off the hope that any vessels would stop til tomorrow, and at the same time spread the dread of cholera among the people, as it had been preceeded a fortnight since by such a wind, and been dreadful for a time. I must confess that considering the hassard (sic) of the disease ... and the improbability of any means of getting off tomorrow in any direction or

up the Lake for some days, there was almost too much reluctance in my conclusion to remain to entitle it to be considered a discharge of duty.

"Spent the morning at Mr. Bingham's and preached in his school to a little congregation of which half were of indian blood. The hymns were read by Mr. B in indian, and by me in English, and sung in both languages at once. I preached and a half breed named Johnson interpreted. Spent the noon talking with Mr. B's family and Mr.Johnson, who seems a very intelligent man. In P.M. preached for ...the Methodist missionary in the school house. The rain kept the congregation away - there were perhaps 15 present. Took tea with Mr. Pitesell [the Methodist missionary]. Upon the whole a very pleasant Sabbath which cured my regret at not having gone in the Napoleon - though not my wish that I could have such an opportunity tomorrow."

On Monday following, Joseph betook himself to the Methodist Mission, saw their farm buildings, and their school for the Indians, and on returning in the afternoon, "found the schooner Swallow waiting for a wind to go to Mica Bay (forty miles up on the North Shore where the Quebec Co. has copper mines), and thence to Eagle River. Went on board in the evening, spent the night ... on Tuesday the 21st [of August, 1849], the vessel was still at anchor - the wind which breathed up the river a little last eve was coming down in a gale so that the captain said he could not sail if he were out. Went back to the hotel to try again. Day spent like others - tiresome." On Wednesday Joseph Emerson had his luggage put on the propeller Independence, which sailed at 11:45 A.M. for Eagle River, on the Keweenaw peninsula.

On gaining Eagle River, the end of the journey had been reached. From Sunday until the following Wednesday, Joseph Emerson explored the region of potentially great mineral wealth. He explored the mines; he visited with mine managers and talked with miners. In his journal he records the detailed operations of the mining and the processing of the copper and the copper ore. Here in 1849 Joseph Emerson saw the potential riches of this copper country, and of the iron mines down near the Carp River--a potential that was not yet realized because of the difficulties in transporting the bulk



copper and copper and iron ores, for the canal and locks at the Soo were not yet started. Four years after Emerson visited the Keweenaw, the federal government began the construction of the St. Mary's ship canal and the locks. Just a century ago the Soo locks were opened, and the potential of the iron and copper country of the Upper Peninsula could be realized. Fortunes had been lost before this development became a reality; but a new wave of prosperity was soon to flow from the Keweenaw through the locks on the St. Mary's and down to the great industrial centers on the Great Lakes, and at Pittsburgh.

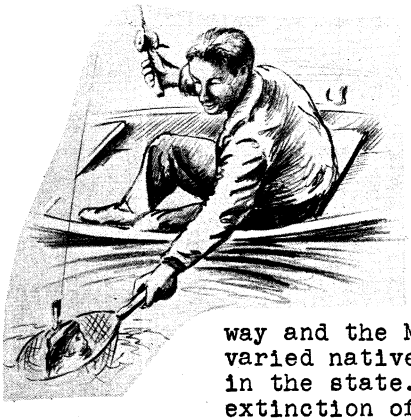
# # #

GROUNDBREAKING FOR UW BIRGE HALL ADDITION

Participating in ground-breaking ceremonies for the new $1,723,000 west wing addition to Birge Hall on September 14, 1955 were (from left to right): MARK A. CULLEN, the contractor, Janesville; President E.B. FRED; Professor LOWELL NOLAND, zoology department; Dean MARK H. INGRAHAM, College of Letters and Science; WILBUR RENK, Vice-president of the Board of Regents, and Governor WALTER J. KOHLER. President Fred said that the addition, which will be used for teaching and research in botany and zoology, will "play a leading role in this, the century of biological sciences." Professor Noland called the event "a day of rejoicing for the teaching and research staff, for a dream of 30 years come true." # #

THE FUTURE OF FISHERY RESEARCH IN WISCONSIN

By Edwin L. Cooper
Chief Aquatic Biologist
Wisconsin Conservation Department



If one were to examine critically the economic and aesthetic values of the fish populations in the lakes and streams of Wisconsin, one would have to agree that they rank as one of the more important of our natural resources. Because of the unique geographical location of the state, with drainage areas contributing to both the Great Lakes - St. Lawrence Waterway and the Mississippi River, a large and varied native fish fauna was found originally in the state. There are no records of the extinction of any native species of fish in Wisconsin but there have been many additions via the early activities of federal, state, and private fish propagation agencies, sometimes to the benefit of interested sport and commercial fishermen, sometimes to the apparent detriment of the public. This large assortment of excellent food and game fishes, and the large variety of aquatic environments, have always permitted ample opportunities for research in fish ecology and the manipulation of fish populations for increased benefits to the public.

The behavior of fishes in a constantly changing environment cannot be understood or predicted without detailed knowledge of limnology and associated biological sciences. In this area of study, the early pioneering work of Birge and Juday stand as monumental contributions. Present day efforts toward expanding our knowledge of fishes and of the environment in which they live are perhaps but dim reflections of the scope of scientific work which these men must have envisioned for the year 1955. The field station on the shores of Trout Lake in the midst of the northeast highlands with its multitude of lake and stream environments suitable for detailed study is now dead, compared with the buzzing activities of the 1920's.

The commendable research of fishery workers at the University of Wisconsin should be expanded to take cognizance of the needs and opportunities which are evident in the state. Likewise, the many perplexing problems in

fish management which continually plague the Conservation Department justify a more detailed and widespread fishery research program.

Support for research of this nature has usually been difficult to obtain. Nevertheless the increasing public use of fishery resources in Wisconsin demands an adequate research program which would include both fundamental studies of the fishes themselves and studies, less detailed perhaps, which measure changes in fish populations produced directly or indirectly through man's activities. Such programs are time-consuming, they demand well-trained and experienced personnel and they must not be motivated by a desire to justify existing programs or to prove a preconceived idea. These stipulations have sometimes made it difficult to obtain administrative or legislative approval when public agencies or public funds are involved, yet it is the minimum price for research findings which can be relied upon to produce predictable results.

The relationship between the Conservation Department and educational institutions such as the University of Wisconsin in solving research problems in fishery matters has long been a cordial one. Quite recently, the Conservation Commission agreed to finance an expanded program of fundamental research to be carried on under University auspices and financed primarily with funds made available under the federal aid program.

The Conservation Commission has also recently recognized the complexity of conservation research by appointing an advisory committee of authorities in this field. This committee, selected from persons outside the department, is to periodically review research programs in fisheries, forestry and wildlife and to suggest improvements. It is expected that the actions of this committee will be of great value to the Conservation Commission in determining the course of future research in the department.

Much has been said and many articles have been written concerning the best way to conduct research in conservation. There is perhaps no best way to accomplish the goals of increasing knowledge in natural resources under varying conditions of public sentiment, institutional tradition, legislative mandate, etc. However, there is general agreement among those who have experienced difficulties in administering and supervising a research program that several conditions are essential for success. These conditions bear repeating: (1) Research must be supported adequately on a continuing basis. Feast and famine policies result in waste and poor results. (2) Research personnel must be given sufficient

freedom of action to accomplish an assigned task. The inferior results of research programs dictated by expediency, by public acceptability or by preconceived ideas eventually destroy public confidence in the value of research itself. (3) Research findings must be evaluated for the benefit of the professional manager and their application must also be explained and demonstrated to the public. When care is taken to accomplish this, generous public support of research nearly always is assured for worthwhile projects. (4) Fishery research must justify itself as a worthwhile profession. Standards for certification as qualified fishery biologists should be established and enforced by interested professional societies to safeguard the reputation and public support of the profession. Adequate salaries and public prestige will not be forthcoming to biologists until such is warranted by the demonstrated ability to produce results.

In Wisconsin, it appears that fishery research is showing some signs of gaining the necessary support to make it a useful and predictable tool in the management of our fishery resources. There have been worthwhile efforts made in explaining research programs to the public but much more needs to be done in anticipating public reaction to changes which will be suggested. Social science research is urgently needed in solving this problem.

One of the major difficulties facing research administrators in Wisconsin today is the recruitment of qualified personnel. On a national scale the better opportunities available in industry and other professions have decreased the supply of recruits into the biological sciences. On the local level, differences in salary between Wisconsin, the federal government, and other leading states in the field of conservation have made it difficult for Wisconsin to attract qualified fishery biologists. It is hoped that steps will soon be taken to make conditions of employment in fishery biology in Wisconsin attractive enough to induce a good supply of applicants for the jobs available. Fishery research in Wisconsin will not continue to grow in stature and value unless this challenge is met.

# # #

FINE ARTS IN A SCIENTIFIC WORLD*

By Frederick M. Logan
Dept. of Applied Arts & Art Education
University of Wisconsin

An artist who finds himself among scientists, must ruefully acknowledge that his work in art, as well as his daily existence is lived on terms imposed by science and technology.

The American scientific technological aspect of our society certainly dominates the world scene as well. It has not, however, convinced the world of the merit of that domination. My claim is that aesthetic objectives are an indispensable part of the larger humane ends which our technical contributions must serve throughout the world.

First let me, as artist, examine our world to point out how the making of all our goods and chattels, the things we wear and live in, our vehicles, our tools, the communications units of television and radio, are made by mass production, in workshops from which the individualized craftsmanship, the aesthetic judgment, possible to the maker of objects in the year 1800, has been eliminated. There is nothing in this statement William Morris did not say seventy years ago.

Then our system of transportation, the main agents of which are the automobile, train, and plane, has finally reached a stage where the placement and design of airports, tracks, and the superhighway, outside of cities; and the organization of streets and parking areas inside urban areas, must technically dominate our landscape in the decades ahead. Unfortunately our technological-scientific society has developed but slight interest in the search for, or recognition of, aesthetic values.

Planning for a human, pleasant scale of environment is currently assumed to mean only accounting for parking areas, for through traffic, and for traffic density at peak hours. The relation of one building to another, the use of trees, shrubbery, lawn areas, benches, public

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* - Excerpts from an address given before the Annual Meeting of the Wisconsin Academy, Milwaukee, May 6, 1955.

comfort stations, for the relaxation, pleasure, and convenience of the human being on foot, is believed worth consideration only in public parks. * * * *

Much of modern art, unlike the radio and television and the movies, is apparently not subservient to anyone or anything. Whether or not as a consequence of this freedom, it presents disturbing forms to a public not able to understand them.

The weird, the wonderful, the disturbing, even the funny shapes so frequently encountered in modern art, are formed by our technological environment just as much as was the ground work for the release of atomic energy. I will contend that these shapes which range from the distortion of nature's shapes to the non-objective, are seriously created, are demonstrably changing and adding to the visual richness with which even the dullest layman sees his world. What is more, I believe, with men like Lewis Mumford, that science itself has had a responsibility for the direction artists have taken since 1850.

* * * *

The public which wants mawkish sentiment has it available by the billions of viewer-TV hours. The serious artist is no more interested in repeating the work of his illustrious predecessors in painting, in their way, sunsets and blushing nudes, luscious still lifes, or men of distinction portraits; than the serious scientist would wish to repeat in nostalgic mood, the early researches of Pasteur.

For the scientist, it is the principles of research Pasteur followed which are his present guides. Similarly for the artist, the nudes of Renoir, the sunsets of Monet, have been accomplished; to try to repeat them can produce only banality.

No great work of art, anymore than an achievement in science, comes from unthinking repetition in the manner of a revered master. Rather, the masterly work of the future will come by using the working principles of the past in an effort to create anew.

# # #

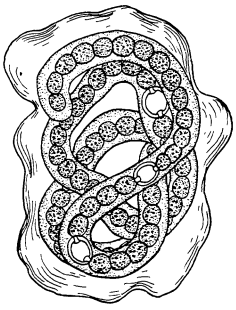
FIRST ISSUE WANTED! ---
Vol. I, No. 1 of the Wisconsin Academy Review for Winter, 1954 (with the golden cover) is out of print. To fill orders from libraries, the editor will pay 50¢ per copy for any in fair condition sent to him. If you're not collecting them, your assistance will be appreciated. ---Walter E. Scott

THE CONTROL OF AQUATIC NUISANCES IN WISCONSIN

By M. Starr Nichols, Assistant Director
Wisconsin State Laboratory of Hygiene

While aquatic plants form an important natural resource in Wisconsin, excessive growth experienced in many localities during the past quarter century has stimulated a re-valuation of the debit and credit side of the ledger in this seemingly natural problem. Certainly, on the credit side of the ledger for rooted vegetation we must enumerate the advantages of spawning cover for fish, food for aquatic birds and animals, natural interference of drainage which acts as flood control and as a source of recharge to ground water supplies, to name just a few. As suppliers of dissolved oxygen to both lake and stream waters these submerged, or partially submerged, green plants are of first importance. On the debit side of the ledger excessive growths of rooted vegetation cause obstruction of navigation, spoil bathing areas, and when dead cause decrease in dissolved oxygen at times to the detriment of fish life.

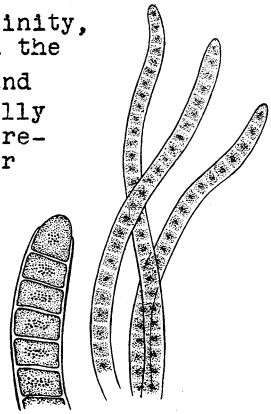
Free floating green plants in moderate numbers add dissolved oxygen during periods of light even to a slight extent by moonlight but use oxygen in excess of that produced during twilight and darkness. Many of the free floating green plants furnish a link in the food chain from sunlight to fish flesh. On the debit side we charge some of them with nuisance characteristics--mainly obnoxious odors. These odors emanate from decomposing cells and originate from volatile constituents liberated. Certain of the blue-green algae, in addition to their stench, contain or liberate a toxic substance. Death of livestock from drinking water containing heavy blooms of these algal cells has been reported. Unsightly shore conditions frequently prevail following heavy algal growths. Decomposing algae may reduce dissolved oxygen to zero thereby killing fish unable to leave such an area.



NOSTOC

The amount of growth of both types of aquatic vegetation depends upon available food supply. While carbon from free and half-bound carbon dioxide form the bulk of the food of all green plants, nitrogen, phosphorus, potassium and small amounts of other elements must also be available. In lake waters there is a great variation in available

carbon which is measured usually as alkalinity, half-bound CO_2 and free CO_2. Nitrogen in the form of free NH_3, nitrites and nitrates and phosphorus in form of phosphates are usually low in unpolluted lake waters and may therefore become growth-limiting substances for green plants. Nitrogen may, however, be fixed from atmosphere by some algae (Nostoc sp.) and some bacteria.



OSCILLATORIA

The increased use of commercial fertilizers on land under plow is a source of both nitrogen and phosphorus found in our lakes and probably in recent years accounts for increases in aquatic nuisances caused by excessive growths. Increased population trends and habitation on shores of many of our lakes causes increased fertility of ground waters entering our lakes. In other words, the disposal of sewage by septic tank, dry wells, cesspools and drainage tile near a lake helps to fertilize the waters in those lakes by underground drainage. Sewage effluent disposal from a treatment plant into lakes likewise adds a quota of usable fertilizer, especially mineralized nitrogen and phosphorus. When sufficient fertilizer is present, weed growths abound and algal blooms occur.

At present there are essentially two practical methods available to control these aquatic nuisances. One obvious method is to curtail the amount of nitrogen and phosphorus entering the lake. This can be done by centralized sewage treatment of all sewage from properties on the shore of the lake and to place the properly treated effluent into a running stream where less effect may be noticed. The second method available is to induce conservation of fertilizer by contour farming and by application of fertilizer to the soil as the plants grow. The other practical method which does give relief (much like aspirin for a headache) is to treat the weeds and algal growths with chemicals. Copper sulfate has been used to control algal growth for nearly a half-century. Properly applied this chemical will control growth of algae and no harm to fish or fish food will occur. It is widely used. There are several organics which offer promise in the field of algal control. Phygon (2,3-dichloronapthoquinone) seems to be somewhat specific for blue-green algae but it has not been used as widely as copper sulfate. Delrad (dehydro-abietylamine acetate) appears to be more active against green algae than the blue-green. Cutrine, (a material containing copper, possibly chelated) has also been used.

Aquatic weeds are killed by proper application of sodium arsenite prepared from arsenic trioxide by solution on strong alkali. All of these materials are usually applied as a spray. Copper sulfate has been applied as a dust of fine crystals. Cutting of aquatic weeds has been practiced but they must be dragged from lake else they pile up on shore and become a worse nuisance.

Swimmer's itch is another aquatic nuisance which is occasionally encountered in this state. The "itch" is caused by entry into skin of cercariae, a stage in the life cycle of non-human Schistosomes. The cercaria develop in several species of snails and emerge to search for the definitive host but encounter man and pierce his skin to cause swimmer's itch. Killing of the snail population on the swimming beach with a mixture of copper sulfate and carbonate is effective as cercariae only live a short time after leaving the snail. They continue to multiply by parthogenetic division for some time in the live snail.

The chemical treatment of all public waters in Wisconsin are under control of the Committee on Water Pollution. Permission must be obtained from the Sub-Committee on Chemical Treatment of Lakes and Streams before any chemicals are used. Correspondence should be addressed to Committee on Chemical Treatment of Lakes and Streams, State Office Building, Madison, Wisconsin, if a problem in aquatic nuisance control is encountered.

# # #

DONATIONS

The Secretary recently received a communication from a Wisconsin Dells attorney advising that the Academy was named in the will of Prof. RUTH MARSHALL. A beneficiary gift of $100 was bequeathed without restrictions. This sum will be added to the Academy's Endowment Fund as a lasting memorial to our esteemed colleague. Prof.Marshall passed away May 12, 1955.

In another communication dated September 24, 1955, C. M. GOETHE enclosed a donation to the Academy in the amount of $50. In Mr. Goethe's very interesting letter are summarized some of his objectives with which many of us will heartily concur. It is his wish that this donation will be used to encourage either 1) the junior membership in the Academy, or 2) promote the membership of our married graduate students who have accepted the responsibility of a family and at the same time attempt to gain a higher degree in the face of rising costs of living. We are very grateful for Mr. Goethe's generosity, and assure him that his contribution will be expended by the Council as he directed. -- R. J. Dicke

INTRODUCING DR. JOHN Z. BOWERS
Dean of U.W. Medical School

By Jack Speiller
UW News Service

The new dean of the University of Wisconsin Medical School, Dr. JOHN Z. BOWERS, brings to Wisconsin not only the benefits of a broad medical training and knowledge of medical administration, but a youthful vigor and forcefulness as well.

A graduate of Gettysburg (Pa.) College with a B.A. degree in 1933, the 42-year old medical dean received his M.D. at the University of Maryland School of Medicine in 1938. A native of Maryland, he also served his internship and residency there, at Baltimore's University hospital from 1938 to 1941. Pearl Harbor came just as he finished his medical training, and he served as a naval commander during World War II. He received the Purple Heart and the Legion of Merit, the latter award for heroic action after the cruiser on which he was serving was bombed and sunk by the Japanese.

Although Dr. Bowers is a specialist in internal medicine, he has also acquired an interest in the new field of radiobiology, a branch of medicine ushered in by the atomic era. He practiced medicine in Baltimore from 1945, when he was detached from the Navy, until 1947. In October of that year, Shields Warren, noted pathologist and specialist in radiobiology at the New England Deaconess Hospital, was appointed director of the newly-formed Division of Biology and Medicine of the Atomic Energy Commission. He asked Bowers to go to work for him. Dr. Bowers had earlier studied under Warren, and he remembers, "That's when I became radioactive." Dr. Bowers and his wife Imogen, whom he married in 1943, hold Shields Warren

in the highest esteem, as "the man who has influenced our lives most."

Dr. Bowers left private practice for the AEC and radiobiology, and he believes this service gave him an opportunity to gain a broad view of many fields of science--agriculture, biophysics, genetics, and veterinary medicine. In the spring of 1948 Dr. Bowers witnessed the nuclear weapons test at Eniwetok and in the summer of 1949 was sent to Japan to survey the studies carried out on survivors of the Hiroshima and Nagasaki A-bomb blasts. Upon his return in February of 1940, he studied radiobiology at the University of California's Crocker Radiation Laboratory at Berkeley, for nine months. He has written widely for scientific journals on the problems of atomic energy as they relate to medicine, and on atomic radiation injuries.

The University of Utah asked Dr. Bowers to be its medical dean, and in February of 1950, he accepted. At about that time, the AEC decided to investigate the problem of the radioactive substance known as plutonium. Dr. Bowers suggested that research be conducted at Utah, and in July 1950, the first contract for a research program was signed. While at Utah, Dr. Bowers took time for two trips to India for the Ford Foundation to study health conditions in the villages.

As the new medical dean at Wisconsin, Dr. Bowers will meet students with a variety of problems and personalities. In his capacity as medical administrator he must also deal with physicians, legislators, educational leaders, and the public. In this respect, his friendly and cooperative attitude, his keen sense of humor and relaxed easy manner will serve him well.

Although he recognizes the need for more doctors, Dr. Bowers knows the inherent dangers of rapid expansion, and says that medical education is becoming a process in which the integration and cooperation of many university departments are essential. "Training doctors must be a joint educational effort carried on by many specialists in different scientific fields," he adds. Dr. Bowers points out that "good faculties are hard to gather," and that an expanding medical school must be certain in advance that it will have "adequate funds and space and outstanding men available to add to its faculty."

The new Dean of the University of Wisconsin Medical School is a man well-equipped by virtue of his personality, and thoroughly capable in his knowledge of medicine and administration.

# # #

FUNCTION AND FUTURE OF THE TECHNICAL INSTITUTE*

By Karl O. Werwath, President
Milwaukee School of Engineering

One of the areas of higher education receiving greater attention now, with the contemplated expansion to meet the tidal wave of students, is the technical institute. It is anticipated that, to meet the demand for engineering technicians during the next decade, increase in full-time enrollments for technician programs will be fourfold.

The growing need for technical manpower is in two directions: number and depth of technical know-how. We are acutely aware of the shortage of engineering personnel. Often it has been referred to as a shortage of engineers. Actually, this is only a part of the engineering shortage problem, since the alarmingly small number of sufficiently qualified engineering technicians is even more serious.

Our best analyses point up the need for 30,000 to 35,000 four-year engineering graduates each year. This is about 200 per million population and parallels closely existing ratios in other modern industrial nations of the world today. The United States, supposedly the most progressive technical nation, is graduating annually only somewhat more than half of this requirement.

But these engineers are a part of an engineering team that includes five engineering technicians per graduate engineer, in addition to the skilled craftsman. Our national educational pattern is almost the opposite, with only one-fourth the needed number of technicians coming from technical institute courses. To retain our position in this Twentieth Century economy, we must identify and develop talent to produce annually double the number of engineers and 10 times the number of qualified technicians.

But who is this engineering technician? What does he do and what is his preparation for his work? He is defined as one who is engaged in certain vital fundamental

* - Excerpts from talk delivered at Annual Meeting of Wisconsin Academy at Milwaukee, May 6, 1955. Reprinted with permission from COLLEGE & UNIVERSITY BUSINESS, March 1955, (copyrighted).

functions of product development, distribution, installation, operation and maintenance. While the engineer plans, the technician makes and does; while the engineer creates, the technician applies. The technician is often the liaison between the professional man and the craftsman.

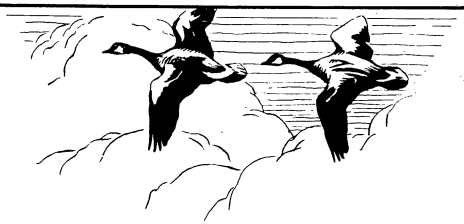
There are some 100 accredited or approved courses in 10 fields in which technicians have become prominent and in which technician employment opportunities have demanded course development. Courses are from one to three years in length but generally require two academic years of full-time study. High school graduation or equivalent is needed for admission and most courses have specific additional matriculation requirements. These programs are briefer and more technical in content than are professional curriculums. They include a heavy schedule of specialized technical subjects and are balanced with a program of related studies in mathematics, physical sciences, and engineering drawing. English, economics, human relations round out most schedules. Such courses generally lead to an associate degree.

What is the future of such a technical institute course in America? The pattern of successfully established programs have two basic, distinguishing factors. First, a technical institute curriculum is planned around the technical specialities and a neatly integrated combination of supporting subjects, both geared to dynamic industrial requirements. This suggests an ingenious approach to curriculum construction, an experienced and practical faculty, specified laboratory facilities, and unique teaching technics. Second, the engineering technician, in executing his work, is a part of management. His educational experiences, of necessity then, should be provided in a free-enterprise environment.

Both of these salient factors suggest close relationships between the technical institute educator and the industrialist who employs the technical institute graduate. It should be a challenging experience in their newly found relationship jointly to plan, finance and execute technical institute programs that serve the best interests of all concerned--opportunities for the young man, prosperity for the industry, and satisfaction to the educator--all in the interest of maintaining a strong and healthy nation.

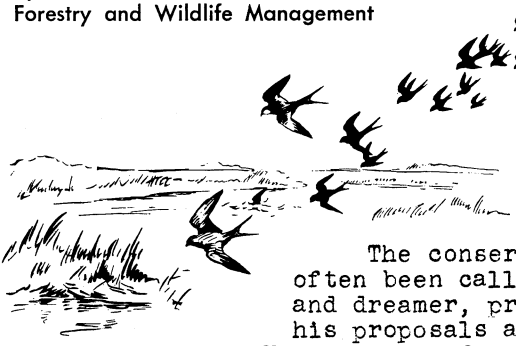
# # #

BE SURE TO MARK YOUR CALENDAR FOR MAY 4 & 5, 1956 —
86th ANNUAL ACADEMY MEETING AT MARQUETTE UNIVERSITY, MILWAUKEE



WETLANDS AND WILDLIFE*

By Robert A. McCabe
U.W. Dept. Forestry and Wildlife Management



The conservationist has often been called an idealist and dreamer, primarily because his proposals as regards land use are often nonprofit. Utilization of wetlands is a theme which again compromises his normal, practical attitude toward the land.

Wetland to be best utilized for wildlife must first maintain its status as wetland. This same acreage to be utilized for agriculture must first be destroyed as wetland and converted into plowland or pasture. A landowner destroys his wetlands by some form of drainage only when he can afford to do so. Our present day economy with high costs for labor, raw materials, manufactured goods and farm commodities makes it financially feasible to encroach on the submarginal wetlands. Virtually all marsh drainage operations in Wisconsin operate against wildlife habitat. It is equally undeniable however, that much of this drainage will put another dollar in the landowner's pocket.

It becomes exceedingly difficult for persons interested in all of our national resources to understand that the government through price supports in effect pays the farmer to produce more surpluses and in so doing "forces" him to drain and plow submarginal areas (or irrigate others). An additional paradox is that even this drainage is supported in part by the same government that pays the parity and holds the surplus. This may be an oversimplification of the situation that may actually be a maze of economic stresses and strains.

* - Excerpts from a talk presented to Wisconsin Chapter, Soil Conservation Society of America, June 25, 1955, Racine-Kenosha Agricultural College, Wetlands Panel Symposium.

The crux of the dilemma which results in a difference of opinion on the status of wetlands is briefly this: An important publicly owned asset, namely our wildlife, is housed and often fed on private property. Furthermore, the landholder has no choice as to the kind and number of public charges foisted upon him. * * *

Our attention must be focused on ways and means of controlling or regulating drainage to conform to the wisest use of the land for the individual and also for society. To this end I believe a drainage committee or commission for each county should be set up to deal exclusively with all drainage problems that are now too small acreagewise to be ruled on by the commissions that govern active drainage districts. It is almost superfluous to say that such a commission must be elected or appointed to avoid completely political bias among its members. It is the small slough or pothole on a single farm that appears to be expendable without critical evaluation. In aggregate these many small areas constitute an important and essential segment of wildlife habitat.

Another approach to this same problem and one which is sorely needed in order to evaluate and control drainage, is the registration of all drainage operators and their equipment. Anyone who has ever attempted to gather statistics on land drainage knows that obtaining a complete drainage picture is like chasing a will-o-the-wisp over endless spoilbanks. If all drainage rig operators were required to report on the where, when, what kind, and what amount of drainage was undertaken in any one year, we would have a base from which to view land drainage in Wisconsin. The process might also suggest a method to cull the fly-by-night rigs that can destroy wildlife habitat without materially affecting adequate agricultural drainage. This last approach, coupled with an honest, conscientious county drainage commission, could contribute much to making our land use cognizant of all resources, public and private.

A second plan of action and one to which I make no claim to originality, is the development of some form of "game crop law", fashioned in principle after our Forest Crop Law. This recognizes that a financial sacrifice has been made by private individuals for the public good. The basic difference here is that the so-called crop benefited by proper land use belongs <u>not</u> to the landowner but to the public. If a state-owned car or truck were parked in your garage or barn you would expect, and rightly so, to receive the same rent that you might expect from any private citizen parking his car on your property. The situation relative to wildlife on private land is very similar. Unlike the Forest Crop Law, I do not think

that the amount of tax due from wildlife lands should be lowered: instead, some source of public funds should be drawn on to defray a part of the tax. Such a system would not alter the tax received by the county, nor should it show unwarranted partiality in the tax levy. The source of revenue might be varied and an equitable solution could come only after a complete study has been made. One source could certainly be the sportsmen who use the land and expect wild game to be available. A program of this kind which at the same time might open more private land to public use, would, I am sure, not be objected to by the enlightened sportsman.

I hasten to state that this should not be a SUBSIDY, but a willing acceptance by the public to pay justly for services rendered. Such willingness to shoulder responsibility will lessen tensions between sportsmen and farmers, and I am sure lead to benefits far in excess of wise use of Wisconsin wetlands. * * *

One of the most outstanding examples of managed wetlands in the entire country is our own Horicon Marsh. Here state and federal wildlife corps have pooled their resources to manage the land for game, fish, recreation, and agriculture, all in the best interests of the wildlife, the land and the public.

A few of the management procedures over and above the research programs that preceded management are: 1 - A share cropping of muskrats by the Wisconsin Conservation Department and selected trappers is currently operative. 2 - Also at Horicon is a program of level ditching which results in the creation of additional aquatic habitat within a wetland unit. 3 - Many states have been using fire and herbicides to regulate the amount and kind of vegetation in small marshes, ponds and potholes. 4 - Iowa was once covered with prairie sloughs abounding with wildlife. Today it is pioneering in the use of blasting to create sloughs were none exist.

5 - Wetland protection from cattle is a management practice so well known and understood that it bears only mentioning. 6 - One of the most outstanding regulators of wetlands, particularly large areas (although in some cases equally effective on small ones) is that of water level control. 7 - Another outstanding example of wetland management is the control of the wildlife harvest. 8 - Lastly and probably the

best single management approach of all is to keep hands off all wetlands producing wildlife. This last attitude is not easily understood by the "action groups". Wetlands like wilderness areas are often self-maintaining.

Our civic thinking is remiss when we allow a landowner to be punished for killing a duck out of season with his shotgun and at the same time condone and financially aid his efforts in destroying forever his entire marsh with tile and ditch. The death of a marsh should elicit the same moral revulsion as the death of a spring-shot duck. When it does, we can legislate, educate and manipulate to make Wisconsin wetlands a productive and permanent natural resource.

# # #

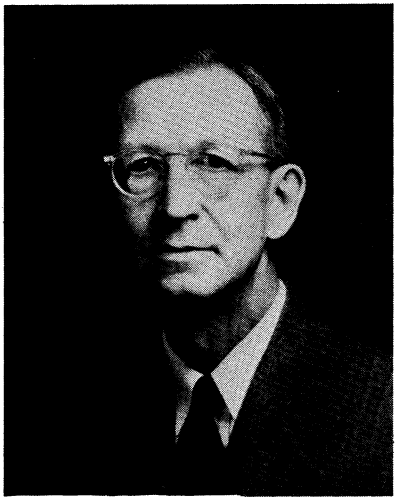
TRIBUTES TO PAUL W. BOUTWELL

By Robert H. Irrmann
Department of History
Beloit College

A graduate of Beloit College in the Class of 1910, PAUL WINSLOW BOUTWELL returned to his alma mater in 1920, having taken his doctorate in Chemistry at the University of Wisconsin, and entered upon thirty-three years of inspiring teaching and service to his College, his chosen discipline, and to the State of Wisconsin. He served the Academy as President in 1940-1942. On the occasion of the last commencement at Beloit College [June, 1955] Paul W. Boutwell was singularly honored with both an Alumni Citation and an Emeritus Citation. Sections of these citations tell more fittingly than any other language the esteem in which Professor Boutwell is held by his colleagues and his classmates in Beloit College:

"Saturated with Beloit training from Academy Freshman to college graduation; understanding teacher of youth through experience in high school work; specialist in chemistry through graduate study and research; beloved college teacher of more than three decades of students as head of our chemistry department; encourager of student initiative and trainer of many creative scientists; actively interested in all Beloit athletics and longtime faculty advisor on the athletic board; research specialist in agricultural chemistry and nutrition; president of the Wisconsin Academy of Science, Arts and Letters: your career has brought distinction to yourself and reflects honor on your Alma Mater.

"This be the evidence of admiration, affection and high regard from your fellow alumni and from Beloit College."



The second citation was tendered in the name of the Faculty and the Board of Trustees of the College:

"At the climax of the fullness of your academic career, your colleagues on the Beloit College Faculty join with the Board of Trustees and affectionately tender this token of their respect for you as colleague, counsellor and friend, in gratitude for the many years of pleasant association in the challenging task of furthering the educational mission of Beloit College, and in hope for years of good health and fortune, the stimulus of colleagues and friends, and the interests of a continuing active life in the college community.

"In bidding you farewell as our daily companion on the campus, we gratefully recall your teaching in classroom and laboratory, teaching so animated and attractive that generations of chemists have gone from Science Hall to world assignments, spreading your sound scholarship in their work in the world of science. We recall as well your warm human love of man and the constant evidence of your belief in mankind that serves as a standard and a goal for us all.

"We of the Faculty of Beloit College have trod an easier path for your devoted and constant attention to these duties, and in thanks present you with this scroll as a sign of our affection and appreciation for the pleasure and the challenge of your companionship as our colleague, now properly accoladed as Emeritus [as of 1953]."

# # #

"Of all national assets, archives are the most precious. They are the gift of one generation to another and the extent of our care of them marks the extent of our civilization."

---The Canadian Archives and Its Activities.
ARTHUR G. DOUGHTY, Canadian Archivist, 1904-1935
(From statue on grounds in Ottawa)

TRANSACTIONS

We are pleased to announce that Volume 44 of the TRANSACTIONS will be published sometime in December 1955. Publication of a volume for the year 1955 was in considerable doubt, and was held past the usual publication date due to a critical lack of funds. However, we were indeed fortunate to receive the aid of two of our Life Members: F. S. BRANDENBURG and W. A. FRAUTSCHI. As officials of the Democrat Printing Company, they have volunteered to publish the volume at a cost considerably below the normal printing costs and within the slender margins of our resources. We are very grateful to these men for their timely generosity.

With a grant of $3000 from the State Legislature for the biennium 1956-57, we are at least assured of funds for the future publication of Volume 45 in 1956. --R. J. Dicke, Sec'y-Treas.

A NOTE ON THE COVER PAINTING

"Near Tomah" is one of ALFRED SESSLER'S painted versions of Wisconsin landscape of the rock formation variety. Perhaps better known for his long series of sometimes amusing and sometimes terrifying false faced clown characters, Sessler is never content to take nature just exactly as he finds it. But despite exaggeration, contortion and the writhing to which he subjects his objects, be they people or rocks, he never violates their essential character. He points up this character with such emotion-packed personalization that art commentators have likened his work to that devil-driven old Dutch master duo: Breughel and Bosch.

Outside his studio Professor Alfred Sessler is an amiable mannered teacher of graphics at the University of Wisconsin. His sound craftsmanship, combined with sensitive aesthetic instincts and the provocative meanings of his pictorial statements, has had stimulating influence on his many succeeding classes of students. And to him directly can go much credit for the interest in the various graphic media: lithography, etching and wood block, which is rapidly growing in Wisconsin and in the entire Midwest.

-- Aaron Bohrod

DOMAIN OF LETTERS

Collected by Prof. Ralph A. McCanse
Associate Editor in Letters

Debatable issues of the following sort are given ready consideration for appearance in the Academy Review. Space limitations should be borne in mind by contributors.

QUERY

Does the writer on "The Visionary Gleam," whose article in the Spring issue of the Academy Review appears to condemn the gleam as "unearned, unpredictable, and transient," desire to interpret William Wordsworth as too objective for proper appreciation of the intangibles of spirit and mind? It is to be hoped not! In response to the possible implication that the author of the great ODE: INTIMATIONS has no use for visionary and mystical experience, allow me simply to quote the following from TINTERN ABBEY. In that poem (lines 22ff.) Wordsworth has been rejoicing (actually!) over

> "sensations sweet
> Felt in the blood, and felt along the heart,
> And passing even into my purer mind
> With tranquil restoration."

He proceeds to a superb passage concerned with

> "that serene and blessed mood
> In which the affections gently lead us on--
> Until, the breath of this corporeal frame
> Almost suspended, we are laid asleep
> In body and become a living soul:
> While with an eye made quiet by the power
> Of harmony, and the deep power of joy,
> We see into the life of things..."

--These devout ideas can only be regarded as mystical. (Is this a crime?) ---D.T.

REBUTTAL

It is not bootless to trade selected poetry passages, though surely each should be considered in full context. The TINTERN ABBEY lines are followed instanter by a

crucial "If" --and are judiciously reviewed by the poet as perhaps "vain belief"!

Mysticism is no crime. "It is to be hoped not!" But this thoughtful poet is not given to mysticism. Such im-mediacy (repudiation of media;--his whole psychological-philosophic system depends upon the senses) he couples with "idleness". (--PRELUDE II, line 230 and context.)

Let none of us, by the way, contemplate anything in Wordsworth without determining what "age" or "stage" the poet is referring to. In his own childhood and youth he was under the dominance of emotion (to the mature Wordsworth indeed a valuable sign of the activity of the adolescent and growing Mind of Man.) Fancy, in the youth, becomes Imagination in the adult; and to Wordsworth Imagination is "Reason in her most exalted mood." (Let us all enjoy his work no end, for its sheer poetry--our contentions finally resolved into delight.)

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Academy member DANA K. AKERS is connected with Wisconsin State College at Superior. He has been peculiarly significant for his North Country local color poems. These have appeared in many publications and we are pleased to present his "Interim."

# # #

FAITH - By President E. B. Fred
(Excerpt from UW Commencement Statement, June 17, 1955)

"Our stoutest shield against fear is faith: In freedom, the only condition which guarantees that truth shall prevail; in justice, that man is innocent until proved guilty; in democracy, with the will of the majority protecting minority right of dissent. These elements of faith, given us by the little group of inspired men whose faith in this land, its people, and the future, prompted them to frame the noblest government in man's history, can be our guide today.

"I have devoted much of my life to science. Yet in my lifetime, I have never seen an important scientific development which was not fashioned by faith. Belief in the order of things, even things unknown, is basic to science. Trust in the integrity of others is part of every step in progress. And without faith in the importance of his investigation, the scientist or the scholar never would push on to reach his goal.

"For you, who graduate today, there is one article of faith I wish to stress: faith in knowledge. This faith, abiding in the hearts of the men and women who created and developed this University, brought you to this day."

# # #

INTERIM

In deep November, all the color faded
In field and wood, with each forgotten sheaf
And tumbled shock by small woods-creatures raided
(And absolution granted to the thief)
An in-between time comes. Though dun leaves lift
On sudden chilly gusts, and dry husks rattle
Along the garden path, no salient shift
Of weather warns of winter's rugged battle.

The snowshoe rabbits, prematurely white,
Face greater odds by Nature's laggard way -
A prey to hovering terror through the night,
A target for the leaden death by day -
With surcease only when the North bestows
The benison of its protecting snows!

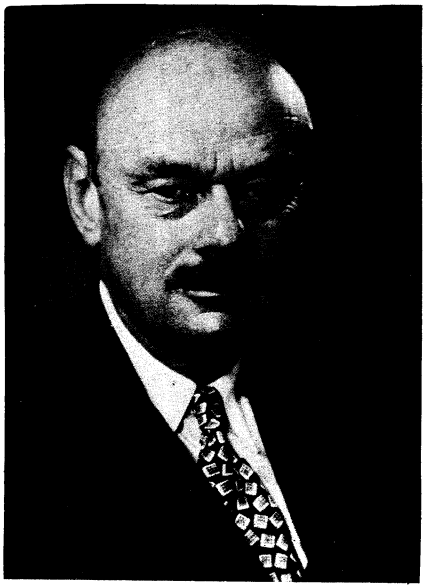
---Dana K. Akers

NORRIS F. HALL — CHEMIST

(A UW Retirement Profile by James A. Larsen)

One of the few American chemists who studied under Marie Curie retired from the University of Wisconsin faculty July 1. Prof. NORRIS F. HALL, who has taught at Wisconsin since 1929, joined the staff of the Argonne National Laboratory for atomic research as a senior chemist emeritus.

His scientific career includes study under Mme. Curie and famed T. W. Richards of Harvard who was the first American chemist to receive the Nobel Prize; research conducted jointly with James B. Conant, former president of Harvard who is now high commissioner of Western Germany; and a long list of research projects, including many on the new chemical elements created with man's most recent research tool--the atomic reactor. His scholarship and breadth of intellectual interest have been widely recognized and appreciated by his colleagues of the Wisconsin chemistry department and the University faculty.



Hall's opportunity to work with Mme. Curie came in 1919 while he was a member of the American Expeditionary Force. He was one of a dozen men who qualified for study at the Radium Institute while waiting for transportation back to the United States. Hall had been selected partly because he held a doctorate in chemistry and had acquired facility with the French language. His father, Lyman B. Hall, professor of chemistry at Haverford College, had taken sabbatical leave in 1909 and with his son and wife--one of the first woman physicians in the United States--spent the year in France. Having just graduated from Moses Brown School, Providence, R. I., young Norris Hall spent the year as a freshman at Grenoble University.

Returning to the United States, Hall attended Haverford and then Harvard, where he studied under Prof. T. W. Richards--a former student of his father's--and began studies of the atomic weights of the isotopes of lead. "Isotopes had been discovered only a few years prior to that," he says, "and, in fact, Prof. Richards was among the last to be convinced of their existence--he had many students working on them, mostly to prove to himself, I believe, that they were not imaginary."

Harvard granted Hall his doctorate in 1917. Commissioned a captain in the chemical warfare service, he was purchasing agent for a short time, then was assigned overseas, eventually to a Paris

research laboratory. In France, he met Alice Garrett, an employe of the YMCA, who later became a member of the American Friends Service. They were married in New York in 1920. They have two daughters--Mrs. Louis Stephens and Mrs. G. Winthrop Sands.

When Hall returned from France, he became an instructor in chemistry at Harvard, and was witness to Mme. Curie's acceptance of an honorary degree from Harvard in 1921. Continuing research on radioactivity at Harvard, he also worked with Prof. Conant, developing many of the techniques used today in research on the chemical characteristics of acids and bases. He moved to the University of Wisconsin in 1929 to teach analytical chemistry, advanced inorganic chemistry, and to conduct research on chemical reactivity. Following his early work on radioactivity he has continued to use isotopes to study basic chemical problems, an approach which has revealed much of why chemical elements behave as they do. In 1939, Hall helped close a chapter on one of the oldest chemical mysteries when the element technetium was discovered. Later, in 1948, he worked out some of technetium's chemistry at the Argonne Laboratory while on leave from Wisconsin.

One day in Paris while Mme. Curie was lecturing, she said, "There is always something new--the possibilities in the field of radioactivity are unlimited." Prof. Hall recalls, "I couldn't believe her. There had been nothing new for several years--I didn't think there would ever be. Her lecture convinced me that everything important concerning radioactivity had already been discovered. How wrong I was," he adds. "Every year has added to our knowledge of the atom and radioactivity--now we have tapped it for power. Today--some 36 years later--we still can say, 'the possibilities are unlimited.'"

# # #

In Memoriam — Clarence Harding Pratt

CLARENCE HARDING PRATT was born in Omro, Wisconsin on May 31, 1879, the son of Sheldon and Antoinette Hamilton Pratt. He attended the public schools, Beloit College and the University of Wisconsin. He married Josephine Burrell of Stoughton in June 1910; she preceded him in death by a couple of years. He was a member of the First Congregational Church and the Masonic Lodge of Ripon, Wisconsin, and of the Wisconsin Horticultural Society and the Wisconsin Academy of Sciences, Arts and Letters. Mr. Pratt is survived by a foster son, Donald, a sister, Mrs. Fred Hankwitz and a brother, Arthur.

A draftsman and mechanical engineer by profession, Clarence Pratt worked for a number of engineering firms throughout the country, including Fairbanks-Morse of Beloit. From 1929 to 1954 he had been chief tool engineer at Speed Queen Corporation of Ripon, having retired just a few months prior to his death.

He was an enthusiastic amateur botanist and horticulturist, discovering many a secluded nook occupied by rare Wisconsin plants. Blessed with an open and inquiring mind, he was delightful company on trips of exploration. He died unexpectedly on October 28, 1954 at the home of a friend while awaiting the completion of a cottage that he was building at the edge of his beloved apple orchard on the east slope of Ceresco Valley. -- George H. Conant

JUNIOR ACADEMY NEWS

By John W. Thomson, Jr., Chairman
Junior Academy Committee

The Junior Academy members are again looking forward to a year of science activities. Meetings, science fairs, and talent searches will find many of the young people of Wisconsin hard at work. The dates for most of these events are set in the fall months and will soon be announced. The Southeastern Wisconsin Science Fair sponsored by Marquette University and the Milwaukee Journal under the guidance of Father L. W. FRIEDRICH, S.J., is arranged for April 12 to 15. The statewide meeting of the Junior Academy will probably be on May 5 at Marquette University.

The results of the annual survey of science clubs active in Wisconsin during the past school year have just been compiled. Last year there were 132 clubs with an estimated membership of 3,959 young people. Photography attracted the largest following with 55 clubs, general science had 25 clubs and radio 19. Other club interests were: astronomy 2, biology 6, chemistry 10, conservation 16, electricity 3, forestry 1, hobby 3, hunting and fishing 1, meteorology 1, nature 5, ornithology 1, physiology 1, and projector 1. A list detailing the cities, meeting days, number of members, and interests and activities of the clubs can be obtained for the asking from the Junior Academy office at 209 Birge Hall, University of Wisconsin, Madison 6.

Prof. ROY CHRISTOPH of Carroll College is the new chairman of the Wisconsin Science Talent Search committee, replacing Prof. STEPHEN DARLING of Lawrence College who still is serving as a member of that important committee. Prof. HENRY MEYER, formerly representing Ripon College, has moved to Wisconsin State College at Whitewater. CLIFFORD A. OLSON, who was a member of the Appleton Area committee, has moved from Sturgeon Bay High School to Webster Integrated High School. ROBERT KOEPPEN, who sponsored the Hortonville Conservation Club, has started graduate work in the Department of Botany at the University of Wisconsin. Sponsorship of the Marquette University High School "Ptolomaniacs" Club has been assumed by Fr. ROBERT OSTERTAG, S.J.

- - - -

STUDIES IN HEREDITY

By Kathleen Hable
Columbus High School
Marshfield

My studies in heredity divide themselves into three parts: 1 - Observations through a breeding program of how coat color in mice is handed down. 2 - Mating Drosophila to obtain the Mendelian ratio and other data on physically apparent deviations. 3 - Charting histories of five selected physical characteristics in human families.

My project began with pedigreed mice: 4 white and 2 brown females and 2 black males. Twenty-one days after mating the dominance of color showed itself in an F_1 generation of all black offspring. The other colors, however, reappeared in the F_2 generation.

I also mated an albino mouse, an offspring of a cross between two black hybrids, with an agouti mouse. All four offspring in the third filial generation were agouti. From this I concluded that agouti is dominant over black and that the allele of albino, also carried by the agouti, is dominant over the albino. In the fourth generation there were: 4 agouti, 4 albino, and 2 black mice. One mouse, however, resembled none of its family nor any other mouse in the 400 I handled in my project. This mouse had a peculiar buff color coat.

In a litter of wild mice under observation, one female, unlike its sisters in the same F_1 generation, goes through cartwheel-like gyrations--50 or more in the matter of minutes--often 200 of them without stopping. This distinctive trait was handed down to one member in the F_2 generation.

Most of my work in heredity has been with Drosophila. The following report is only a brief summary of some of the results.

By mating "dumpy", a fly with truncated wing, with a female virgin wild-type, I obtained the following results: 1 - All the flies in the F_1 generation were wild. 2 - In the F_2 generation 25% had the truncated wing and 75% were wild, a 3:1 Mendelian ratio. A cross between the F_1 generation hybrids and "dumpy" flies gave an approximate 1:1 ratio of "dumpy" and wilds. Matings between "dumpy" and ebony flies also produced wild-type flies in the F_1 generation, but mating within the generation resulted in four phenotypes having a 9-3-3-1 ratio.

I obtained an unusual pattern of inheritance from a cross between a white-eyed female Drosophila and a red-eyed wild-type male, which produced only white-eyed males and red-eyed females in the F_1 generation. Crossings within the F_1 level resulted in red-eyed and white-eyed offspring among both sexes in approximately equal proportions.

I have also discovered some mutations in my experiments with Drosophila. In an F_{10} vial of inbred wild-type flies appeared a fly with truncated wings, which is the recessive mutant-type dumpy. By breeding this male with females taken from the same vial I obtained some dumpy offspring, a result which indicates that some of the females were heterozygous. From this result I have reason to believe that a recessive mutation has arisen and that by the process of inbreeding it became visible. The second mutant came from a stock vial of flies with truncated wings. This fly had one normal and one truncated wing which phenomenon seems to indicate a somatic mutation. (Fig. 1)

Among flies irradiated with a dosage of 4000 roentgens from a radioactive Co^{60} gamma-ray source, I found such departures from the normal as flies with curly wings, miniature eyes, and several with wings reduced to shrunken appendages. One unusual fly had a criss-cross body stripe instead of the normal parallel stripe.

In my study of lethal mutations and accelerations of genetic changes I observed the effects of X-ray irradiation. Male Drosophila were given 320 roentgens per minute for 6.3 minutes. In order to detect any lethals that might have been produced in the X-chromosome of the treated males, I used a special type female carrying one normal X-chromosome and one X-chromosome in which the central portion was inverted. The inverted chromosome also carried a dominant gene for a bar-shaped eye and a recessive

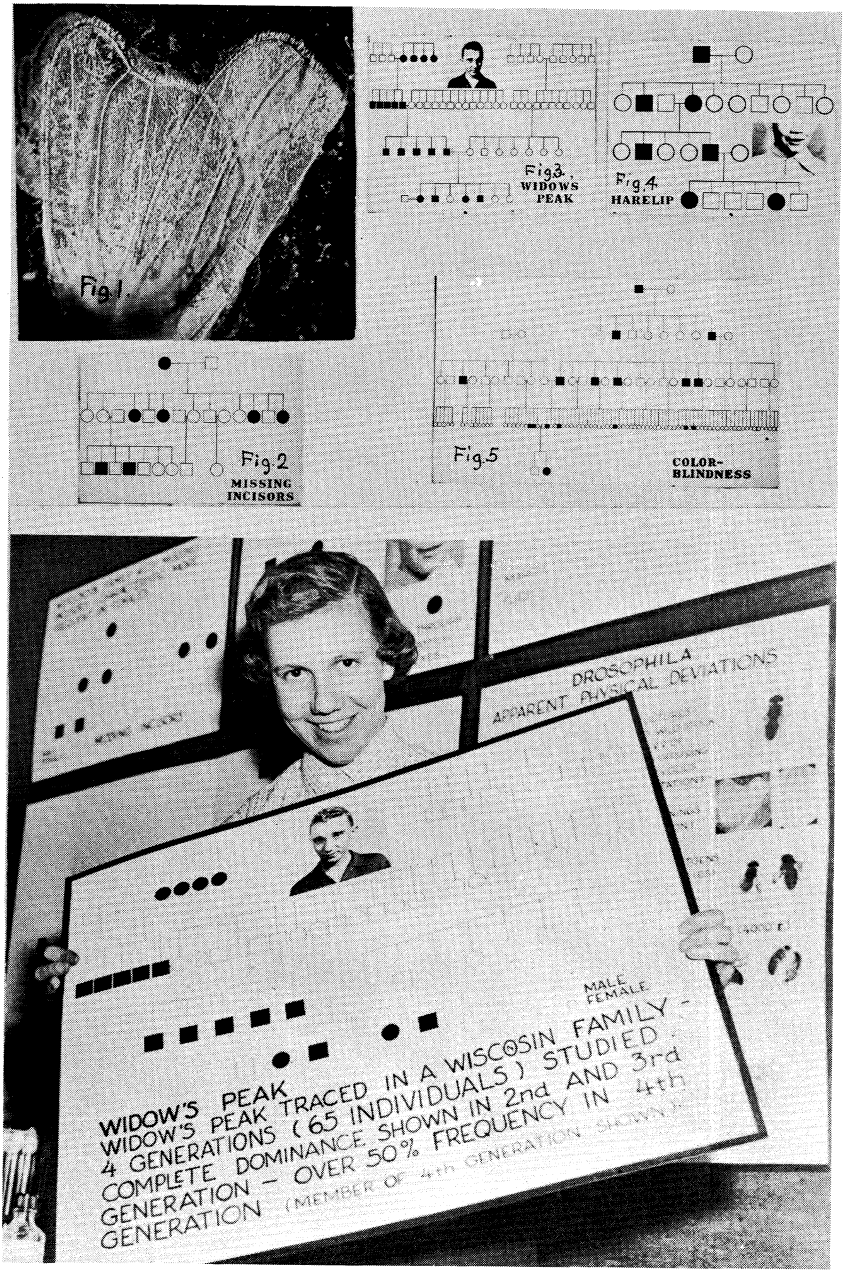


Fig. 1
Fig. 3, WIDOWS PEAK
Fig. 4 HARELIP
Fig. 2 MISSING INCISORS
Fig. 5
COLOR-BLINDNESS
DROSOPHILA APPARENT PHYSICAL DEVIATIONS
MALE
FEMALE
WIDOW'S PEAK
WIDOW'S PEAK TRACED IN A WISCONSIN FAMILY - 4 GENERATIONS (65 INDIVIDUALS) STUDIED
COMPLETE DOMINANCE SHOWN IN 2nd AND 3rd GENERATION - OVER 50% FREQUENCY IN 4th GENERATION

lethal gene. From matings of these females with the X-rayed wild-type males I obtained an approximate 1:1:1 ratio of normal males, normal females and bar-eyed females.

The results from 150 crossings made between the bar-eyed female offspring and the normal wild-type males again included normal males, normal females, and bar-eyed females. However, in 5 vials there were no males at all among the offspring. I concluded that those vials containing only female offspring indicated that a lethal mutation was produced in the X-chromosome of the first parental generation of X-rayed males.

To make my heredity research more practical, I traced the pedigrees of 5 Wisconsin families for the characteristics listed:
1 - A family of 25 individuals was studied for missing lateral incisors. The chart shows that 5 girls and 2 boys inherited the characteristic. (Fig. 2)
2 - For eye color I chose a pedigree in which the ancestry traced to Italian descent for brown eyes and Irish for blue eyes. Because of color dominance, as expected, all persons in the third generation had dark brown eyes.
3 - Widow's peak, like eye color, is a simple characteristic easily identified. My data covers four generations. Among the 65 individuals studied both sexes possessed the characteristic: 12 males and 6 females. (Fig. 3)
4 - Congenital malformations such as harelip also tend to run in some families. My record shows that 7 out of the 24 individuals studied have this affliction. The record also shows that both males and females can inherit it. (Fig. 4)
5 - Color-blindness is usually defined as the inability to distinguish red and green. In the family I studied, those who are color-blind are unable to distinguish any color unless it is unusually bright. For four generations the character was handed from father to son. In the fifth generation, however, it was also passed on to one daughter. (Fig. 5)

Summing up my heredity work it is fair to conclude that these pedigrees, as well as the information gathered from the inheritance patterns obtained with the mice and Drosophila give only a hint of the conclusions that might be drawn if consistent records were kept for several more generations.

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←——KATHLEEN ANN HABLE, Columbus High School, Marshfield. Second Place nation-wide winner among 16,000 high school applicants won the $2000 Grand Scholarship of the Westinghouse Educational Foundation. First student from Wisconsin to win Grand Scholarship.

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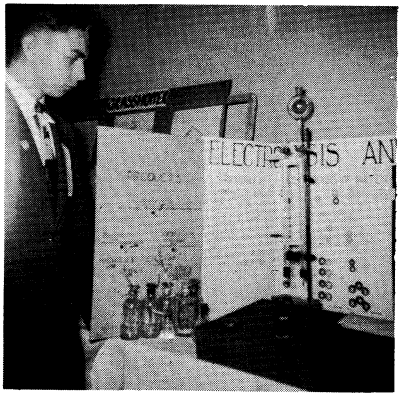
ELECTROLYSIS OF SOLUTIONS

By Neil Kestner
Boys' Technical High School
Milwaukee

Several months ago I became interested in the effects of an electric current on solutions. This study consisted of producing samples by electrolysis and electroplating. The aim soon changed, to a mathematical study of these reactions.

The best reaction to study I have found is the electrolysis of water, as its reactions are so common and plentiful.

The first step involved the gathering of background material from which I came to the conclusion that many authorities differ



NEIL KESTNER, one of two in Junior Academy awarded membership in American Assn. for Advancement of Science.

on the exact method by which the oxygen is produced. The newer books ascribe it to the hydroxyl ion (OH^-) but the method is still questioned.

The only way to investigate this method was a mathematical study. So first of all, as in any mathematical study, I set the boundary conditions (the factors I did not consider):
1 - Assumed that the water molecule exhibits no dipole moments, i.e. that it doesn't act as a charged particle.
2 - I considered only the electrons responsible for the charge, as responsible for the action on the hydrogen nucleus in the hydroxyl ion.
3 - I neglected the fact, in order to get an approximation, that the latest theories have the hydrogen ions, the hydroxyl ions, and the hydronium ions united by electric action to the water molecules.

The selection of the method involved, first of all, the determination of the radii of the neutral and charged hydroxyl group as this is the part being considered. These values were accomplished by equating the force acting on the hydrogen nucleus in the hydroxyl ion as equal to the force necessary to remove an electron from the oxygen atom or ion, as the case may be, since on splitting the hydrogen nucleus becomes a neutral atom. The energy to remove an electron was found by the summation of the energy necessary to cancel the effects of the strong oxygen nucleus and the energy necessary to slow the electron down to the speed of the normal hydrogen electron. The values of the radii for the two extreme positions of the electrons were found to be as follows:

	Neutral Hydroxyl	Charged Hydroxyl
Position 1	2.94 by 10^{-9} c.m.	4.95 by 10^{-9} cm.
Position 2	Complex (stable state)	Complex (stable state)

These values are widely separated because of boundary condition (2) and this means that in the charged group we are considering the total effects of two electrons corresponding to the neutral group where only electrons is considered. The charged group gets the same energy at a greater radius but this is the combined force of two electrons and hence to become unstable it must apply all its force to just one electron at the given radius. But our deductive reasoning tells us that at a given radius the neutral group is more stable than the charged group. It should also be remembered that these values are not actual values, but values corresponding to the point of equilibrium.

This indicates that the charged group is less stable so that our reaction should proceed as follows, if we consider the radius of the charged group as being intermediate to the two values given above

At cathode: $H_2O \longrightarrow H^+ + OH^-$

$2H + 2\,e \longrightarrow H_2 \uparrow$

At anode:

My theory:

$4OH^- \longrightarrow 2OH^- + 2H^+ + 2O^-$ (one-half the period they are unstable)

-4 electrons $\longrightarrow 2OH + 2H + 2O \longrightarrow$

$2H_2O + O_2 \uparrow$ (known result, but my interpretation is that it forms a most stable system)

The results are far from complete and are purely mathematical. The work I have done on the stability of the different products may be tested by spectrometry; the theory can be applied to known energies of dissociation and I may be able to predict some new effects on electrolysis. So far I have done little to prove my theory or to expand it to include other facts but in the future I hope to have a complete set of equations to fit the conditions. I hope to later go into some related topic and problems in physical chemistry also.

# # #

WISCONSIN ACADEMY COUNCIL MEETING

By R. J. Dicke, Secy.-Treas.

A meeting of the Academy Council on September 17, 1955 was called to order to President J. G. BAIER, Jr. at 2:15 p.m. in the Council Room of the University of Wisconsin's Milwaukee Extension Division. Council members present were: J. G. BAIER, Jr., R. N. BUCKSTAFF, S. F. DARLING, R. J. DICKE, C. L. FLUKE, R. H. IRRMANN, K. G. NELSON, and by invitation, J. W. THOMSON, Jr. Chm. Junior Academy of Science, and W. E. SCOTT, Editor, Wisconsin Academy Review.

The following membership applications were accepted without reservation by the Council:

(Reported in last issue)

Sustaining - HOFFMASTER COMPANY, Inc.

Active - JACK BALTES
PAUL A. CARLSON
Sister MARY EVELYN
CHARLES A. KEMPER
L. H. KINGSTON
SAMUEL H. LIPTON
Miss KATHARINE MARTINDALE
LAURENCE F. MOTL
ARTHUR A. OEHMCKE
RAYMOND J. PENN
PHILIP H. PERSON
RICHARD G. SCHULZE
JOSEPH H. STOECKELER
JAMES H. ZIMMERMAN

(New this issue)

Active - WALTER W. ENGELKE, Prin., Nakoma School, Madison
Mrs. W. W. ENGELKE, Madison
L. W. FRIEDRICH, Marquette University, Milwaukee
C. H. HERLACKE, Bank of Sturgeon Bay
G. B. LEE, Soils Dept., UW, Madison
LILA LOCKSMITH, UW Extension Center, Menasha
DAVID P. MARBLE, Prof. Chem., Wis. State Coll., Oshkosh
VELA L. MARBLE, Oshkosh
L. J. STILES, Dean, UW School of Education, Madison
IRWIN H. WISEMAN, Winnepeg, Canada

Since the Council meeting, applications have been received from:
ENID L. BEVER, Milwaukee Downer College
E. L. CHAMBERS, State Entomologist, Madison

Applications for Active membership (cont'd):
ANTON LINDNER, State Lab. of Hygiene, Madison
GORDON H. MILLER, Triarch Products, Ripon
MARJORY A. MILLER, UW Extension Center, Milwaukee
ELSA STILES, Sheboygan
CLEVELAND PUBLIC LIBRARY, Cleveland, Ohio

Items of business transacted or discussed were as follows:

1. A contract for publication of Vol. 44 of the TRANSACTIONS at a cost of $2500.00 was placed with the Democrat Printing Co. (See further story on page 22).

2. C. L. FLUKE was appointed by the President to superintend the sale of separates and back issues of the TRANSACTIONS.

3. Appointment of an Editor for the TRANSACTIONS was discussed, and several prospects for this position are to be interviewed by the Council.

4. Library memberships are to be encouraged, and the President appointed a committee composed of S. F. DARLING, Chm., W. E. SCOTT, and J. W. THOMSON, Jr. to promote the sale of Academy publications to libraries.

5. An invitation to hold the 86th Annual Meeting at Marquette University was accepted, and the date set for May 4 and 5, 1956.

6. The Council authorized the institution of a Program Committee to formulate and arrange all future Annual Meeting programs, composed of the President (Chm.), the Vice-Presidents, Chairman of the Local Committee on Arrangements and the Secretary-Treasurer, ex officio.

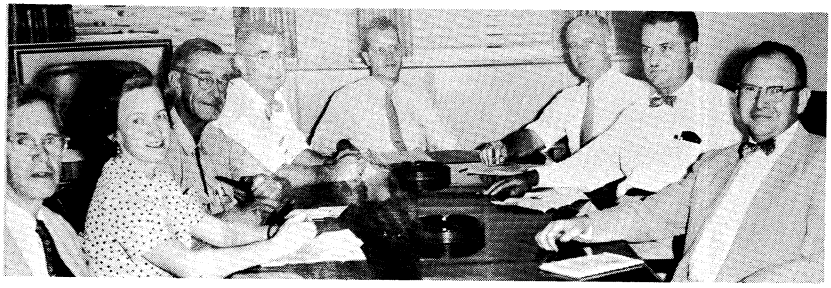
7. The President appointed a Committee of Investments for the Academy Endowment Fund as follows: A. W. SCHORGER, W. A. FRAUTSCHI, and the Secretary-Treasurer, ex officio.

8. The President was further ordered to appoint a committee to promote contributions to the Endowment Fund.

9. J. W. THOMSON, Jr.,Chm. of the Junior Academy of Science, was authorized to head a committee to investigate sources of contributions for scholarships for outstanding Junior Academy members.

10. The Secretary-Treasurer was awarded a set of TRANSACTIONS (with the exception of Vol. 1) for his personal use.

The meeting was adjourned at 5:05 p.m.



Members attending Council Meeting at Milwaukee, Sept. 17, l. to r.: Past Presidents R. N. BUCKSTAFF, KATHARINE G. NELSON, C.L. FLUKE; J.W. THOMSON, Jr., Chm. of Junior Academy of Science; President J. G. BAIER, Jr.; W. E. SCOTT, Editor, Wisconsin Academy Review; Vice-presidents S. F. DARLING (Sciences) and R. H. IRRMANN (Letters). Sec'y-Treas. R. J. DICKE was the photographer and again missed being in the picture.

WISCONSIN ACADEMY EXCHANGES

By Carol J. Butts
Assistant in charge of exchanges
UW Memorial Library

An interesting, though little known phase of Academy activity is the exchange relationship with 192 academies, universities, and societies in the United States and 446 in other countries. Each of these organizations receive copies of the TRANSACTIONS as they are printed. In return, we receive a wealth of material, much of which could not be obtained any other way.

The items thus received are bound at the expense of the University and incorporated into the collection of the Memorial Library, University of Wisconsin. The Library also attends to purchase of volumes to complete sets, which accounts for the lack of Academy identification on some volumes of the "Academy" sets.

The volumes in the "Academy Library" are subject to the same rules as those in the University collection. Out-of-town members wishing to consult any of the publications listed below should arrange to obtain them by inter-library loan through the nearest public or institutional library. If this is not possible, special arrangements can be made for direct loans through the Inter-library loan department, Memorial Library. These rules are made to safeguard the property of the Academy as well as that of the University library, since many of the volumes would be difficult or impossible to replace in case of loss.

Titles are listed as they appear in the public card catalogue of the Memorial library. The phrase "Joint University exchange" signifies that both the TRANSACTIONS and some University publications are sent to the organization and we receive a variety of items in exchange.

(Editor's note: The list will be published in two parts.)

Aargauische naturforshende gesellschaft, Aarau, Switzerland. Mitteilungen
Abo. Finland, Akademi. Acta academiae aboensis. Humaniora
Mathematica & physica
Academia Brasileira de ciencias. Anais
Academia Columbiana de ciencias exactas, fisicas y naturales Revista
Academia de ciencias, bellas letras y nobles artes de Cordoba, Spain. Boletin
Academia de ciencias exactas, fisicas y naturales, Madrid. Revista
Academia de ciencias y artes de Barcelona. Memorials
Nomina personal academico
Academia nacional de ciencias "Antonio Alzate," Mexico Memorias
Academia nacional de ciencias, Cordoba, Argentina. Boletin
Academia sinica. Science record
Academie de Macon. Annales
Academie de Metz, lettres, sciences, arts e agriculture. Memoires
Academie des sciences, belles-lettres et arts d'Angers. Memoires
Academie des sciences, arts, et belles-lettres de Dijon. Memoires
Academie des sciences, belles-lettres et arts de Rouen Precis analytique de travaux
Academie des sciences et lettres de Monpelier. Bulletin
Academie des sciences, Paris Annuaire
Academie du Var, Toulon. Bulletin

Academie royale des sciences, lettres & beaux-arts de Belgique
Classe de beaux arts. Bulletin
Mededeelingen
Memoires. Collection in 8°
Classe de lettres. Mededeelingen
Verhandelingen
Classe de lettres et des sciences morales et politiques
Bulletin
Memoires
Memoires in 4°
Classe des sciences. Bulletin
Mededeelingen
Memoires. Collection in 8°
Memoires. Collection in 4°
Verhandelingen
Academy of natural sciences of Philadelphia. Notulae naturae
Academy of natural sciences of Philadelphia. Proceedings
Academy of science of St. Louis. Transactions
Acadeian naturalist-University of New Brunswick
Accademia delle scienze,Torino Atti. Classe di scienze,fisiche, matematiche e naturali
Accademia delle scienze fisiche e matematiche. Rendiconte
Accademia delle scienze. Ferrara. Atti
Accademia delle scienze, lettere e arti di Palermo. Atti
Bollettino
Accademia di scienze, lettere e belle arte di Acireale. Classe di science. Memorie e rendiconti
Accademia di scienze lettere ed arti, Modena. Atti e memorie
Accademia di scienze lettere e arti, Udine. Atti
Accademia Gioenia di scienze naturali. Atti
Bolletino
Accademia nazionale dei Lincei. Rendiconti fisici
Accademia nazionale XL. Rendiconto
Accademia Roveretana degli agiati. Atti
Acta albertina; Regensberger naturwissenschaften
Acta biologica (Hungarian academy of science)
Acta borealia A Scientia
B Humaniora
Acta botanica bohemica Ceskoslovenska botanicka spolecnost
Acta botanica fennica Societas pro fauna et flora fennica
Acta chimica (H.A.S.)
Acta entomologica fennica Suomen hyonteistieteellinen seura
Acta historica (H.A.S.)
Acta horti bergiani. Bergianska tradgarden, Stockholm
Acta linguistica (H.A.S.)
Acta mathematica (H.A.S.)
Acta medica (H.A.S.)
Acta orientalia (H.A.S.)
Acta physica (H.A.S.)
Acta physiologca (H.A.S.)
Acta phytogeographical sueica. Uppsala. University. Vaxtbiologiska institut
Acta zoologica fennica Societas pro fauna et flora
Acta zoologica Lilloana. Instituto Miguel Lillo,Tucuman,Argentina
Akademie der wissenschaften. Gottingen. Nachrichten. Mathematisch-physikalische klasse
Akademie der wissenschaften under literatur. Mainz.
Abhandlungen der mathematisch-naturwissenschaftlichen klasse
Abhandlungen der klasse der literatur
Abhandlungen der geisted-und sozial wissenschaftlichen klasse
Jahrbuch
Akademie van wetenschappen. Amsterdam. Verhandlungen
Akademie van wetenschappen. Amsterdam. Carmina certamnin

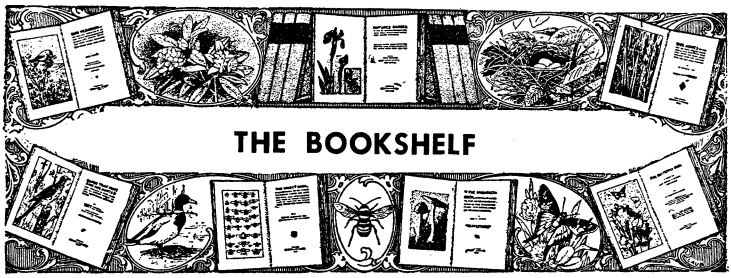
Akademia nauk. Leningrad. Izvestia:Seriia biologicheskaia
Vestnik akademia nauk SSSR
Akademia nauk. Kiev. URSR Visnyk
Akademia nauk. Moscow. Doklady
Akademija umiejetnosci, Krakow (see also under Polska akademija umiejetnosci)
Starunia
Wydzial filologiczy. Bulletin international. Classe de philologie, classe d'histoire
Wydzial matematyczno przyrodniczy. Bulletin series. BI BII
Comptes rendus mensuels
Memoires. Serie B
Alabama academy of science. Journal
Alabama. Geological survey. Joint UW exchange
El Aliso. Rancho Santa Ana botanic garden
American academy of arts and sciences. Memoirs (when publ.resumed)
American midland naturalist. Notre Dame U.
American museum of natural history. Bulletin
American philosophical society. Proceedings Yearbook
Amsterdam. Indisch institut. Afdeeling handels-museum. Berichten
Afdeelingtropische producten
Ankara. University. Faculte des sciences. Communications
Series A. Math-Phys. Series B. Chimie. Series C.Sci.naturelles
Aquila. Madartani intezet, Hungary
Arbeiten zur Rheinischen landeskundes. Bonn, University
Archives Neerlandaises de Zoologie. Nederl. dierkundige ver.
Argentine republic. Comision nacional de la energia atomica. Publ.
Miscelanea phys-math
Series fisica. Series matematica. Series quimica.
Arizona. University. Joint UW exchange
Arquivos de zoologica do estado de Sao Paulo
Arkansas academy of science. Proceedings
Arkiv for astronomi (Svenska vetenskapsakademien, Stockholm)
Arkiv for botanik (S.V.)
Arkiv for fysik (S.V.)
Arkiv for geofysik (S.V.)
Arkiv for kemi (S.V.)
Arkiv for matematik (S.V.)
Arkiv for mineralogi och geologi (S.V.)
Arkiv for zoologi (S.V.)
Arthrodire Cleveland museum of natural history
Association Canadienne-Francaise pour l'avancement des sciences.
Annales
Astarte Tromso museum
Ateneo di Brescia. Commentario
Australian museum. Records Memoirs Annual report
Austria. Geologische bundanstalt. Jahrbuch geol.
Verhandlingen geol.

Belfast natural history and philosophical society. Proc.& reports
Belfast naturalist's club. Annual reports
Bergen. Norsk institutt for kosmisk fysikk. Publikasjoner geol.
Bergen, Norway. University. Arbok
Berlin. Humboldt-Universitet. Wissenschaftliche zeitschrift
Gesellschafts-und sprachwissenschaftliche reihe
Mathematisch-naturwissenschaften reihe
Berlin. Universitat. Zoologisches museum. Mitteilungen biol.
Birmingham natural history and philosophical society. Annual rep.
Proceedings
Bloemfontein, South Africa. National museum. Researches
Blumea Rijks herbarium, Lieden
Bollettino di pesca pisicoltura e idrobiologia
Bologna, University. Istituto di entomologia. Bollettino
Bonner geographische abhandlungen

Botanical society of Edinburgh. Transactions and proceedings
Botanisk tidsskrift
Brasil. Departamento nacional da producao mineral
Divisao de fomento producao mineral
Bulletin Avulsos
Divisao de geologia
Boletins Relatorios Nota preliminares
Laboratorio producao mineral Boletins
Brasil. Servico florestal. Arquivos
Bremen. Ubersee-museum. Veroffentlichungen
Breviora. Harvard U.
Brighton and Hove natural history society. Reports
Bristol naturalists' society. Proceedings
Brooklyn botanic garden. Contributions biol.
Brunn. Universita. Lekarska fakulta. Spisy...Scripta medica.
Brunn. Universite. Prirodovedecka faculta. Spisy.
Brussels. Jardin botanique de l'etat. Bulletin
Brussels. Musee royal d'histoire naturale. Bulletin Memoires
Buenos Aires. Instituto nacional de investigacion de la ciencias
Communicaciones...ciencias geological naturales.
Buenos Aires, Universidad nacional. Instituto de investigaciones
Anales de historia antiqua y medieval historicas
Buffalo society of natural sciences. Bulletin
Buitenzorg. Java. 'S lands plantentuin. Contributions
Bulgarska akademia na naukite, Sofia.
1.Compte rendus. Sciences, mathematiques, et naturelles
Institut za pochveni izuchvaniia. Trudoves.
Zoologicheski institut i muzeh
Fauna na Bulgara Isvestiia
Calcutta mathematical society. Bulletin
Caldasia biol.
California academy of sciences. Academy newsletter
Occasional papers Proceedings
California. University. Berkeley. Joint UW exchange
California. University. Los Angeles Joint UW exchange
Cambridge philosophical society. Biological reviews
Canada. Geological survey. Joint UW exchange
Canadian entomologist
Candollea. Conservatoire botanique, Geneva
Cardiff naturalist's society. Transactions
Casopis ceskoslovenska spolecnosti entomologicke
Ceiba Tegucigalpa, Honduras
Ceska spolenost nauk, Prague
Trida filosoficko-historico-Jazykospytna. Vestnik
Trida mathematico-iriro-dovedecka. Vestnik
Ceskoslovenske akademie ved. Rozpravy
Ceskoslovenske zoologicka spolecnost. Prague. Vestnik
Ceylon journal of science. Sections A, B, D and G
Charleston museum. Leaflet
Chicago academy of sciences. Bulletin
Museum activities Special publications
Chicago natural history museum. Annual report
Bulletin Fieldiana: Zoology
Ciencias y montana
Circolo matematica di Palermi. Rendiconti
Cleveland museum of natural history. Scientific publications
Colloquium geographicum Bonn
Colorado museum of natural history. Museum pictorial
Colorado scientific society. Proceedings
Colorado. University. Joint UW exchange
Colorado-Wyoming academy of science. Journal
Columbia University. Joint UW exchange
Connecticut academy of arts and sciences. Memoirs. Transactions

Connecticut geological and natural history survey. Joint UW exch.
Conseil des academies de la RPF. Yougoslavie. Bulletin scientifique
Copenhagen, Universitet, Zoologisika museum. Skrifter biol.
Cornell U. Joint UW exchange
Cranbrook institute of science. Annual report
Bulletin News letter
Czechoslovak republic. Statni geolgicky ustav. Sbornik geol.
Daedalus--formerly American academy of arts and sciences. Proc.
Dansk botansk arkiv
Dansk geologisk foreming. Meddeleser
Danske naturhistorish forening. Videnskabelige meddelelser
Danske videnskabernes selskab. Matematish-fysishe meddelleser
Oversigt over selskabets virksomhed
Darwiniana Instituto de botanica Darwinion
Decheniana Naturhistorischen verein der Rheinlande und Westfalens
Delpinoa Orto botanico dell'Universita do Napoli
Denison University. Journal of the scientific laboratories
Denmark. Kommissionen for videnskabelige undesogelser i Gronland
Meddelelser Forlegnelse
Deutsche akademie der wissenschaften zu Berlin. Jahrbuch
Deutsche geographische blatter geol.
Documenta occupationis teutonicae Posen
Doriana Museo civico di storia naturale Giacomo Doria
Doshida engineering review
Dresden. Mineralogisch-geologisches und praehistorisches museum.
Mitteilungen
Dumfriesshire and Galloway natural history and antiquarian society
Transactions
Durham. University. Philosophical society. Proceedings

East African natural history society. Journal
Entomological society of Ontario. Report
Edinburgh geological society. Transactions geol.
Egyptian academy of sciences. Proceedings
Elisha Mitchell scientific society. Journal
Entomologisk tidskrift
Entomologiske meddeleser
Estudis romanica
Euska-jakintza
The Explorer
Fennia
Finland. Geologiska forskninganstalten. Bulletin
Finska vetenskaps-societeten. Arsbok-vuosikirja
Bidrag till kannedom af Finlands natur och folk
Commentationens humanarum litterarum
Commentationens biologicae
Commentationens physico-mathematicae
Florida academy of science. Quarterly journal
Foldrajzi kozlemenyek Magyar foldrajzi tarasag
Franklin institute. Journal
Freiburger forschungshefte. Reihe D. Kultur und technik geol.
Genoa. Museo civico di storia naturale Giacomo Doria. Annali
Memoire
Genootschap ter bevordering van natuur-,genees-,en heelkunde,Werken
Geographical review American geographical society
Geographische gesellschaft in Lubeck. Mitteilungen Forschungen
Geographische gesellschaft zu Hanover. Jahrbuch geol.
Geological society of London. Proceedings
Geologie en mijnbouw
Geoloska foreningen. Forhandlingar
Geophysical magazine. Tokyo. Central meteorological observatory
Geophysical research in Norway. Annual report
Georgia academy of science. Bulletin (continued in next issue)



GROWTH OF ART IN AMERICAN SCHOOLS
By Frederick M. Logan

Harper and Brothers
49 East 33rd street
New York, 16, N. Y.
1955 - $3.50

(Review from COLLEGE ART JOURNAL, Summer 1955, XIV 4; reprinted with permission.)

Since the publication of Walter Smith's Teachers Manual of Free Hand Drawing and Designing in 1873 a great many books have been written on various aspects of art education. Each has made its contribution either in point of view, in philosophy, in subject matter or in the expressive development of the individual. For the first time, with the exception of brief historical accounts in earlier books, there appears in one volume a complete synthesis of all previous writing on art education.

Growth of Art in American Schools is in many ways a phenomenal book. Nowhere in the literature of the field may one find such a thorough, well documented and scholarly treatment of the historical development of art education. But Logan presents more than a mere factual history. His research includes all that is historically significant and in addition brings to light many generally unknown influences. The historical facts are clearly stated and with them the author analyzes educational developments as related to social and political conditions, to current pedagogical theory, and to the then existing artistic climate. The thoughtful fusion of such elements brings, for the first time, the development of art education into true and decisive perspective. Of even greater significance is the emphasis given to the relationship of the past to the ideas and problems facing art education today.

Logan discusses a host of subjects including Freubel's Kindergarten, Hegel's philosophy, the influences of such artists as West, Peale, Eakins and Ryder, John Dewey, Franz Cizek, the Bauhaus, the progressive education movement, and the Owatonna Art Education Project. These are not only described but are shown in relationship to each other so that one is able to grasp their significance in the total, evolving scheme of art and education. The essential idea of such books as the Visual Arts in General Education, Lowenfeld's Creative and Mental Growth, Read's Education Through Art and Dewey's Art as Experience are similarly treated.

Any attempt to analyze what has happened in the past involves judgments as to value and the degree of influence. Logan has shown unusual skill, not only in describing the nature of developments, but also in assessing their relative value. It may be asked, however, whether sufficient emphasis has been given to the part

that the private elementary and secondary schools played in the development of art education between 1920 and 1935. It was in the private schools at this time that important innovations were being introduced and practiced. What was practiced, was written and talked about. The results of the art programs were frequently exhibited at the annual national conferences of the Progressive Education Association. Because of the interest in a new methodology and child art, the art teachers in these schools were often obliged to teach for visitors from the public schools across the nation and on occasion for teachers from foreign countries. In many instances new approaches reached the public schools only after they became well established in the experimental private schools.

Logan briefly mentions a J. L. Todd, director of the Public Industrial Art School of Philadelphia, in connection with Mr.Todd's interest in permitting children to think for themselves rather than being chained to a system of drawing cubes and hemispheres. I wonder if Logan is referring to J. Liberty Tadd who wrote New Methods in Education first published in 1898, running to 10,000 copies by October, 1912. If so, it would be interesting to surmise the extent of Mr. Todd's influence particularly since New Methods in Education devoted a considerable portion of its illustrated text to art including recommended exercises in ambidextrous drawing.

In his final chapter title, Art Education: The Shape of Things to Come, Logan looks into the future. The suggestions he makes in this connection are all the more commanding since they grow out of a careful analysis of the past and present state of art education. It is certainly one of the finest chapters in the book. The ideas presented are provocative not only for the student and art teacher, but for school superintendents, college teachers and administrators, and art conscious laymen. Here Logan forsees greater efforts made toward aesthetic integration through the communication arts, and more stress on the training of the artist-teacher and his efficient use in public education. His discussions on social responsibility in art, art and general education, art education associations, and what may be anticipated for the colleges and the public schools are at once lucid and eminently challenging.

Growth of Art in American Schools is indeed a most significant contribution to the literature in art education.

--HAROLD A. SCHULTZ, University of Illinois

# # #

FRONTIERSMAN OF FORTUNE
By Kenneth Duckett

State Historical Society of Wis.
816 State street
Madison 6, Wisconsin
1955 - $4.00

(Excerpts from review by WALKER D. LYMAN, Wisconsin State College, River Falls.)

It is not often that the "little people" of history find a biographer. Likewise, it is most unusual when those who play on the larger stage but who fail to become governor or to head a business attract competent writers and established publishers. . . . In American society, the words "success" and "failure" have been given special meanings within the framework of our culture. We have believed that success came to those who had the desirable characteristics of energy, application, perhaps genius and possibly virtue. Those who failed did so because of their own shortcomings. . . . Back in Vermont where so many of Wisconsin's pioneers had their origin Moses Strong tasted of this heady national wine as he

prepared for the law. Sensing the great fortunes that might be made by those who went West to grow up with the country he decided to throw in his lot with Wisconsin Territory.

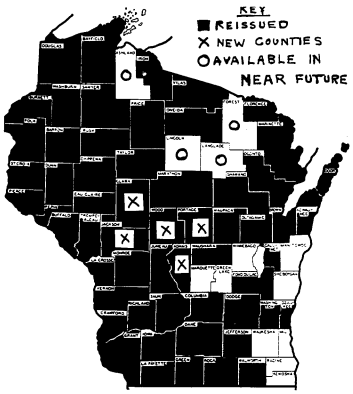
In 1836 he came to southwestern Wisconsin and was to spend most of his life in that region. For five years he entered wild lands for himself and his clients in the East. Then he established himself as an attorney and threw himself into the Democratic party and the political cauldron of the day. In turn he became U. S. attorney, a member of the territorial legislature in 1841, a delegate to the constitutional convention in 1846, a railroad speculator, and a dabbler in lumber mills and lead mines. By 1860 he had reached a plateau--not the pinnacle--having property in nine counties with an estimated value of $55,000. However, Strong could never reach the summit from the plateau...His long sought appointment to the state Supreme Court never came to crown his legal career and his party failed to nominate him for lieutenant governor in 1884. Having failed to reach the pinnacle in both politics and business, he turned to the writing of a history of Territory of Wisconsin which the legislature subsidized and which is still a standard reference for that period.

# # #

INSECTS OF WISCONSIN FORESTS by R. D. SHENEFELT and D.M. BENJAMIN. Univ.of Wis. Ext. Circ. 500. June 1955. 110 pp. This circular describes the damage and control of many of the forest insects of Wisconsin. Written in non-technical language, it includes a section dealing with the reasons for insect troubles in the forest and the principles of control. The work is designed for use by High School Conservation classes, as well as for foresters and entomologists. Single copies, free, from the Agricultural Bulletin Mailing Room, UW, Madison 6, Wis. In lots, it may be purchased at 25¢ per copy.

---Roy D. Shenefelt

INTRODUCTION TO THE SOILS OF WISCONSIN by FRANCIS D. HOLE and GERHARD B. LEE. Soil Surv.Div., Wis.Geol.& Nat.Hist.Surv.,Bull.79. 1955, 48 pp. An educational bulletin which describes briefly how Wisconsin soils are classified, and what the general soil regions of the state are. Fifteen soil keys follow, by means of which an observer can classify the common soils. The appendix includes a list of soil names with brief descriptions, and Wisconsin maps showing bedrock geology, glacial deposits, wind-blown deposits, native vegetation and frost dates. 10¢. ---Francis D. Hole



COUNTY LAND USE MAPS AVAILABLE -- Maps showing land use and cover are available for 58 Wisconsin counties. Stapled in sets by counties, separate ones for each civil township show roads, section lines, forest cover, streams, lakes and other features. They have been widely used by sportsmen, telephone companies, conservation workers, soil surveyors, lumbermen, persons interested in buying land, schools, etc. Maps for certain counties are newly published while others that were out of print are reprinted. Counties in white on the map at left are still unavailable. Sold at 50¢ per county, the cost of printing, they may be obtained from Dept.of Agriculture, State Capitol, Madison, Wis.

-- Walter H. Ebling

OUR HUMAN RIGHTS
By Rebecca C. Barton

Public Affairs Press
2163 Florida avenue
Washington 8, D. C.
1955 - $2.50

(Review from BOOK NOTES, A Supplement to the Wis.Library Bulletin, Vol. 51, No. 5, Sept.-Oct. 1955)

It is a privilege to salute a Wisconsin author whose book will have such wide appeal and to so many readers as we feel certain this book will have. The author, Rebecca Chalmers Barton, is the Director of the Governor's Commission on Human Rights of Wisconsin. It had been formed in 1945 and she has directed the program since 1948. Mrs. Barton relates the history of the Commission, its goals, and its methods of procedure, its hopes and plans for the future. Her faith and confidence in those who helped with the work of the Commission were justified many times over.

Mrs. Barton reminds us that by statute the Commission was instructed by any "proper means" to make this State "a better place in which to live," and emphasizes that this work has been accomplished through joint efforts of members "representative of all races, creeds, groups, organizations and fields of endeavor."

--Orrilla T. Blackshear

# # #

30TH STAR, edited by JAMES I. CLARK. A new monthly periodical, done up in newspaper fashion, which will be built around short articles on Wisconsin and national history, pictures, book reviews, brief biographic sketches, historical columns. For high school historians, it will provide a medium for publication of articles written by students. Monthly feature articles will follow a chronological order to tie in with the course of American history. Individual subscription to 30th Star (published Sept. through May by the State Historical Society, Madison) is 50 cents.

-- From Wisconsin, THEN and NOW

PESTS & DISEASES OF TREES & SHRUBS. Bulletin 330, Wis.Dept.Agr., May-June 1955. Revision of previous bulletin. Prepared under the supervision of E. L. CHAMBERS, State Entomologist. Illus. 88 pp. Available free from Wis. Dept. of Agriculture, Madison.

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WISCONSIN RESEARCH INVENTORY, Second Edition. Research Bull. 119, August 1955, mimeo. 27 pp. Inventory of the wide variety of studies being made concerning Wisconsin, recently or shortly to be completed. The compilers "feel reasonably certain that there are several hundred other studies which should be incorporated into such a list" for the use of those who sense the "values of a procedure whereby all the hands might know what all the other hands had done or were currently up to." Prepared by Wisconsin Legislative Reference Library, M. G. Toepel, Chief, State Capitol, Madison.

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BLACK HAWK: An Autobiography. Edited by Donald Jackson. The life story of a famous Sauk warrior who fought fanatically to keep his lands in the Mississippi Valley. A new edition of the American classic first published in 1833. Introduction and notes include hitherto unknown details of Black Hawk's amazing tour of the white man's east. Maps and illustrations. Nov. 10, Univ.of Illinois. $3.75.

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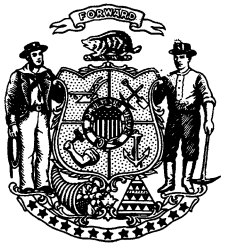

State and Academy News

NEWS NOTES FROM CARROLL COLLEGE, Waukesha
Submitted by Prof. Benjamin F. Richason, Jr.
Chairman, Geography & Geology Department

The Geography Department at Carroll College was elevated to major status during the 1954-55 year. There were 19 majors and this fall one student continued his work at the Univ. of Colorado toward a Master's degree in geography. During the year a weather observation station was established on the campus. Students in the beginning geography laboratory science course make weather readings three times daily and broadcast this information to the Waukesha community over the local radio station. The radio station established a direct line to the geography office and all broadcasts are made from there.

During the summer a group of geography students toured the High Plains, Southern Rocky Mountains, and Black Hills for study purposes. Traveling by station wagon, they were gone for two and a half weeks, and covered 3,500 miles. Some interesting highlights included visits to the laboratories of the Bureau of Reclamation at Denver, Climax Mine at Climax, Colo., Homestake Mine at Lead, S.D., the Uranium Buying Depot at Edgemont, S.D., and the bentonite mines and mills at Belle Fourche, S.D.

NEWS NOTES FROM BELOIT COLLEGE
Collected by Prof. R. H. Irrmann (Review Reporter)

CHARLES GRANT CURTIS, Asst. Professor of Sociology in Beloit College, and newly elected to membership in the Academy, was recently appointed Director of the Beloit Alcoholic Information and Education Center. This is a significant civic position, and entails counselling cases referred to the Center by social agencies, by the courts, by the police, by industry, and by private individuals. In addition to the counselling, Mr. Curtis is called upon frequently to present the work of the center in public addresses, most often on the problems of the alcoholic and the problems that this situation creates for both industry and society.

WILLIAM S. GODFREY, Jr., Asst. Professor of Anthropology in Beloit College since 1951, an authority on the Newport Tower and on the Vikings in America, Executive Secretary, Secretary and Treasurer of the American Anthropological Association, was this past July (1955) official delegate to the 3rd Pan-African Congress on Pre-History, held at Livingstone, Northern Rhodesia, Africa. He was the official delegate for the Peabody Museum at Harvard University, for the American Anthropological Assn., for Logan Museum of Beloit College, and for the Wilkie Foundation of Des Plaines, Illinois. . . . The American Anthropological Association, upon the election last year of Mr. Godfrey as Executive Secretary, moved its offices to Logan Museum, Beloit College, Beloit, Wisconsin, and Logan Museum is now the national headquarters of the Association.

NEWS FROM ST. NORBERT COLLEGE, De Pere - Father DENNIS M. BURKE, O. Praem., has been named president of St. Norbert college. He was vice-president for 13 years under the late Abbot Pennings.

NEWS NOTES FROM MILTON COLLEGE
(From official news release)

"Not all the important skills are taught in technical schools. In fact, the more important skills - the moral, mental and social skills - are probably better taught in the liberal arts curriculum." This thesis was developed by Milton College's seventh president, PERCY L. DUNN, in an address delivered before the general conference of Seventh Day Baptist churches held at Fayetteville, Ark. late in August. . . . He referred to the advance of government into education. "Our problem today is to keep the government, especially state and federal bureaus, from overriding the field of higher education. In 1950, half of the 2½ million college enrollees attended independent schools; by 1960, however, if the present trend continues, only one of every three will be in those independent schools, and the 66 percent will be educated at government expense. The chief reason for this trend is the lack of financial resources in the non-tax-supported schools.

"Making the situation really alarming is the trend in our tax-supported colleges and universities towards sacrificing liberal arts for increased technical training, just at the time when prominent national leaders are crying for more education in the broader field of liberal arts. The President of a prominent mid-western university recently said, 'Only liberal education proposes to teach a man what he is and can be, what he has been and why.'" President Dunn defined the purpose of liberal education. "The liberal arts college tries to develop the student's intellectual qualities: his capacity to reason, his powers of perception, and to a degree his ability to understand the limitations of the human mind."

NEWS NOTES FROM MILWAUKEE PUBLIC MUSEUM
(Submitted by W. C. McKern, Review Reporter)

ROBERT DIERBECK, Associate Curator of Education and Television Coordinator for the Milwaukee Public Museum, has just received the first President's Award of the National Broadcasting Company as a part of that Company's program to encourage the training and development of young personnel with outstanding ability in the field of dramatic arts. The award consists of $6,000 and a course of instruction under the Company's personnel, in New York City and elsewhere as assigned. Mr. Dierbeck will be on leave of absence from the Museum for one year. . . . MURL DEUSING, Curator of Education in the Museum, has returned from Africa where he spent the better part of four months on loan to the National Broadcasting Company's program: Zoo Parade. He reports exceptional success in photographing the wild life of Africa. He and his motion pictures will be available in due time for lectures, free when in Milwaukee.

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ACKNOWLEDGMENTS of illustrations used with permission (other than those cited with material elsewhere): Photos (pages 1 and 21) from Beloit College Archives; sketch (p.3) from copyrighted Milwaukee Journal, Oct. 2, 1955; photo (p.4) by Gary Schulz from copyrighted Wisconsin State Journal, Sept. 15, 1955; sketches, pages 5, 7, 17, 19, 20 and 25 (of raccoon) by Charles W. Schwartz in Missouri Conservationist and "Whirring Wings" published by Missouri Conservation Commission; sketches(pages 10 and 11) from copyrighted Catalog No. 40 of General Biological Supply House (Turtox); photo (p.13) from U.W. News Service; sketch (p.25 of snowshoe hare) by Olaus J. Murie from copyrighted "Those of the Forest" by Wallace Byron Grange (Flambeau Publishing Co., Babcock, Wis.); photo (p.26) from copyrighted Wisconsin Alumnus, July 25, 1955.

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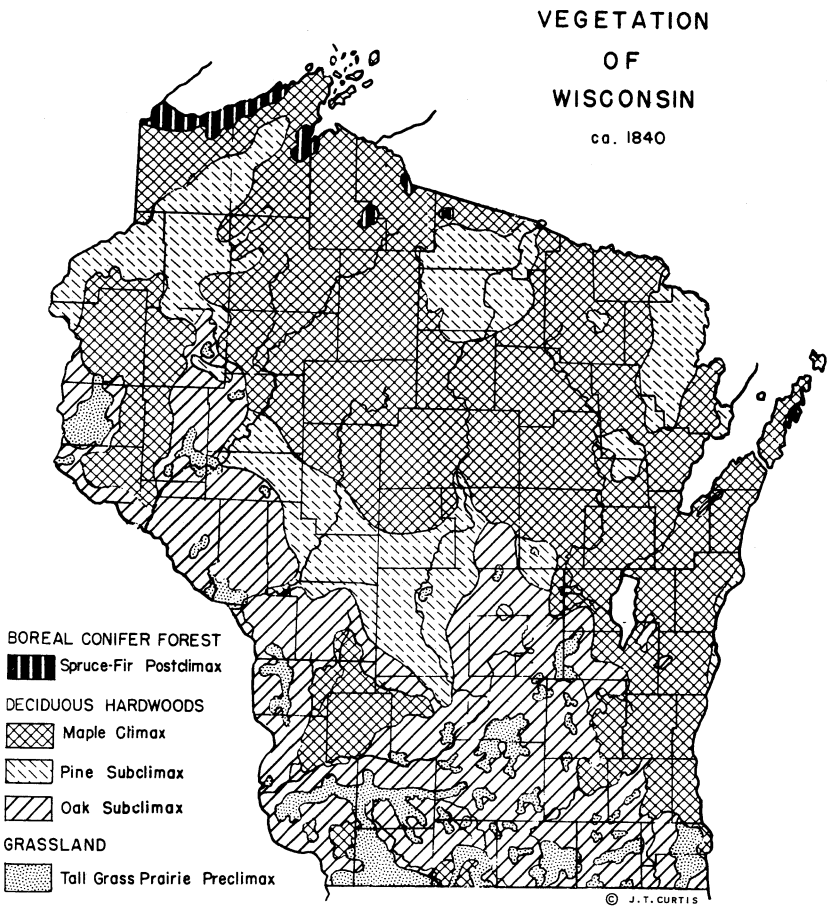

EXPLANATION - "This map shows the approximate locations of the major upland plant communities of Wisconsin of a century ago, as compiled from the records of the original governmental land survey made between 1830 and 1860. The maple forests included much basswood and slippery elm in the south and west and yellow birch, hemlock or beech in the north and east. The pine forests included extensive areas of open barrens of scattered jack pines as well as closed forests of red pine and white pine. The oak type was mostly oak savanna, although a few areas of closed forest of black, white, and red oak, hickory and black cherry were also present. Lowland areas of marsh or swamp have been omitted." -- J. T. CURTIS, Professor of Botany, UW, who also furnished the copyrighted map.