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# WISCONSIN ACADEMY REVIEW

FALL, 1956



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## WISCONSIN ACADEMY REVIEW

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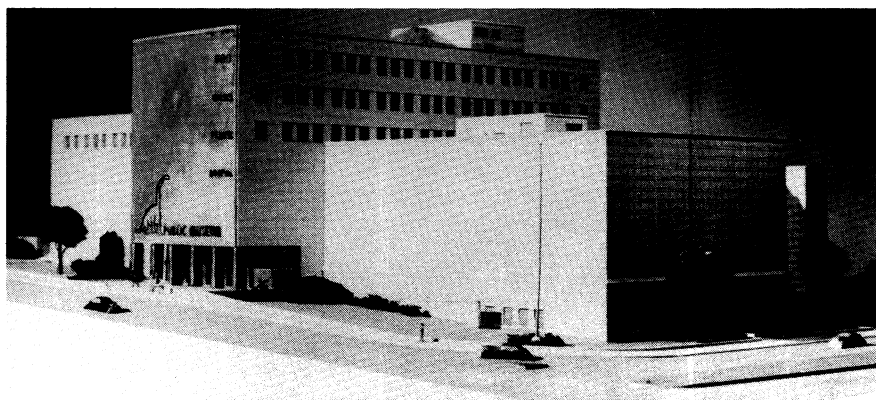
## MILWAUKEE PUBLIC MUSEUM—PAST, PRESENT AND FUTURE

By W. C. McKern  
Director

The Milwaukee Public Museum, rated as one of the four largest natural history museums in the United States, ranks high in the scope and excellence of its exhibits, its services to the public, and in the reputation of its staff scientists, educators and museum technicians.

Its high standard of accomplishment was reflected from the very beginning. The Milwaukee Public Museum had its origin as a tiny museum of natural history objects originally collected to serve as teaching aids in a private local school established by Peter Englemann in 1851, later known as the German-English Academy. By 1857 interest centering around the collection had developed to a point where a Wisconsin Society of Natural History was formed. Leading citizens, including the eminent Increase Lapham, donated specimens and even the Smithsonian Institute contributed materials.

Finally the specially arranged hall of the Englemann Academy proved too small and in 1881 a move to transfer the exhibit of 19,000 specimens to the city was undertaken. Enabling acts were passed by the legislature of 1882. The Milwaukee Public Museum thus officially came into being and the collections were moved to rooms in the Exposition Building which was located on the site of the present city



Eight years on the drawing board, plans for the new museum show a six-story building which would be built on an already selected site in the city's civic center.



auditorium. The exhibits in the new quarters, which provided more than double the former floor space, were opened to the public in 1884, the same year Thure Kumlein, the famous Wisconsin ornithologist, joined the Museum staff. William Morton Wheeler, who later received world-wide recognition for his studies of the ants and other social insects, served as one of the Museum's earliest directors. He was succeeded by Henry Nehrling, a widely known plant ecologist, and an authority on palms and tropical shade trees during his later years with the U. S. Department of Agriculture.

An event of great significance took place in the growing Museum when Karl Akeley developed the first habitat animal group in 1889, and thus introduced a new and life-like method of exhibiting museum materials that soon was to be copied by natural history museums all over the world. Akeley went on to make a science out of the taxidermic method and achieved considerable fame as a sculptor, inventor and author.

Other men affiliated with the Milwaukee Public Museum in its early days were destined to attain world-wide recognition in their respective fields, among them G. W. Peckham working with the spiders and solitary wasps, C. T. Brues, whose valuable researches on the parasitic wasps is attested to by the many valuable types deposited in the Museum's fine insect collection, Richard Muttkowski for his studies of the dragonflies of North America, and Herbert Stoddard for his contributions to the fields of conservation and wildlife management.

During this early period generous donations of specimens and funds by interested citizens rapidly increased the size of the Museum collections. The B. F. Goss bird egg collection, the E. H. Stiles' collection of Wisconsin antiquities, H. Hayssen's collection of archeology and ethnology, the Henry Haskell copper instrument collection, and Otto Finsch's collection of South Sea ethnology were among those added to the Museum, and soon the halls of the Exposition Building became inadequate, and a move was under way to build new quarters for the expanding Museum. The erection of the present Library-Museum building was begun in 1894 and completed in 1898. The opening of the new building gave great impetus to the growth of the Museum, providing an almost eight-fold increase in exhibition space and attracting numerous donations, including the famous Nunnemacher collection of arms and other objects valued at \$100,000.

In 1912 additions to the Museum building were made that doubled the available exhibit space and the Museum's collections continued to expand. During the period that

followed, the significant Aztalan excavation was started. Collections of specimens continued to pour in. In 1928 the Cudahy-Massee Museum Expedition spent nine months in Africa collecting large quantities of specimen material. Storage and laboratory conditions became desperate by 1929 and a fifth floor was added to relieve the situation. Still the collections came in, among them the Sivyer art objects and the Uihlein stamp collections. Expeditions went out during the 1940's to various areas and continued into the fifties with Museum men going to the Arctic, India, Africa, the South Seas and New Zealand.

In 1953 the Museum Annex, an area that had been converted from the old nearby Calumet Club, had to be vacated and torn down to make way for a new public library addition. There was no proper place to either exhibit or store all the valuable specimens that had been housed in this area and so it was found necessary to close important exhibit areas and use the walled-off corridors for storage of this great mass of displaced materials. As a result, regardless of the fact that the city it serves has in recent years been undergoing phenomenal expansion, the Museum now has 20 percent less exhibit space than it had thirty years ago.

Thus the Milwaukee Public Museum, which has a national reputation as a progressive institution, is suffering from the crippling effect of an antiquated building and is suffocating from the pressure of overcrowded conditions brought about by its own vigorous growth. Unless the Museum can find release from the millstone of its inadequate housing, it cannot provide the quality and degree of cultural and educational facilities the city deserves and demands.

Plans for a new building have been long completed. The new Museum will be completely functional - designed from the inside out to serve specifically in its arrangements and details, the exact needs required of it. All of the experience and forward thinking of this and other museums throughout the country have been employed to assure those ends.

The question of whether the Museum will be provided with the new quarters it so badly needs will be decided by referendum in the general election this fall.

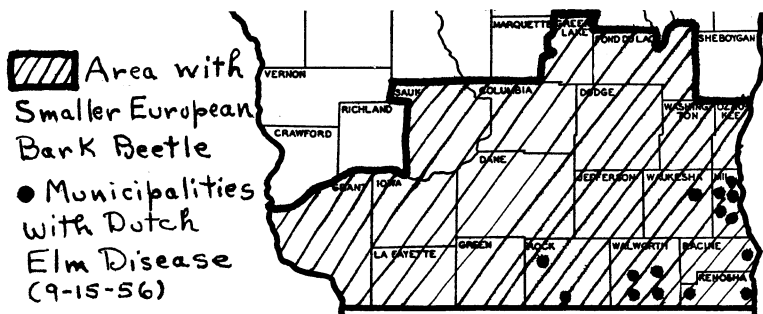
# # #

## THE DUTCH ELM DISEASE IN WISCONSIN

By E. L. Chambers  
State Entomologist

The Dutch elm disease is a relatively new disease of our American elms. It was believed to have been introduced into this country from England on Burl elm veneer logs in 1930. This fatal disease of the elm is caused by a fungus, Ceratostomella ulmi, that gets into the water conducting vessels of the tree and multiplies rapidly and causes the leaves to wilt and the tree to die. It is introduced into healthy elms by two species of elm bark beetles feeding on the twigs and small branches.

In the past 25 years since its introduction, the disease has spread into most of the states east of the Mississippi River and as far south as the states bordering on the Gulf of Mexico. By 1950, it appeared in southern Illinois and in five years spread over most of the state. Continuing its pattern of spread of nearly a dozen counties each year, it was not surprising to have it appear in Wisconsin this summer, the first tree being found at Beloit on July 6. Subsequently, it has been found in six counties. By the 15th of September, 52 trees had been diagnosed as being infected with the disease in 15 municipalities. Some 20 municipalities were surveyed street by street under the supervision of the State Entomologist's Office in search of elm trees showing symptoms of the disease. Twigs showing typical discoloration of the wood beneath the bark from more than 600 trees have been cultured. Probably a much



## POSITIVE DUTCH ELM DISEASE SPECIMEN LOCATIONS --

Beloit (2), Delavan (2), Fox Point (1), Glendale (3), Janesville (1), Kenosha (11), Lake Geneva (1), Milwaukee (4), Racine (17), Silver Lake (1), Walworth (1), Waukesha Co. (1), Wauwatosa (5), Williams Bay (1) and West Allis (1).

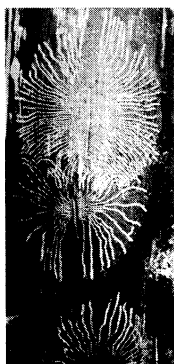
larger number of samples were screened out as showing no evidence of the brown discoloration characteristic of the disease making culturing unnecessary.



The principal vector of the Dutch elm disease is the smaller European elm bark beetle (Scolytus multistriatus). This is one of our introduced pests and was first reported in the East in 1904, and it was not until 1952 that it was found in Wisconsin.

First reported from Milwaukee County, annual surveys made by the State Entomologist's Office reveal it to be present in 19 southeastern counties as of September 1956, the farthest north being reported at Fond du Lac and Green Lake Counties. This beetle appears to confine its attack to elm, showing preference for breeding in recently cut, broken, or dying elm but feeds upon the healthy trees and because of this habit spreads the Dutch elm disease when the adults emerge from infected elm wood where they become contaminated with and carry the spores of the disease.

On the healthy trees, the work of the beetle can be detected by the feeding scars in the crotches of the smaller twigs. Evidence of attack on dead or dying elm trees or parts thereof is the small round emergence holes made by the adults, often the bark of such trees appearing as though hit by "bird shot." Examination of the wood beneath the bark of such an infested tree will reveal a characteristic pattern of tunnels. The female makes a vertical tunnel following the grain of the wood about two inches long in which she lays her eggs, and the larvae upon hatching cut similar tunnels at right angles to the original one. There are two generations each year. The native elm bark beetle (Hylurgopinus rufipes) is also of importance as a carrier of this disease, and in some areas of other states it is still the only carrier present.



The Wisconsin Department of Agriculture has been able to obtain excellent cooperation from all of the municipalities where this disease has been found. Diseased trees are being removed, burned promptly, and the area within 1,000 feet sprayed with DDT and sanitation practices carried out. All efforts of control must be directed toward the beetles and elimination of their breeding places. Elm material can be destroyed by burning or by turning and wetting all bark surfaces with a 1% emulsion of DDT.

Where elm is the most logical tree to use, it may still be planted if some provision is made for its protection against the Dutch elm disease.

# # #

## PEST MOSQUITOES IN WISCONSIN

By Robert J. Dicke

Department of Entomology, UW

Altogether, there are some 36 species in Wisconsin's mosquito fauna representing only about 28% of all the species described for America north of Mexico. This is a relatively small group of insects for the entire State compared with Charles Fluke's 200 or more syrphid flies or Roy Shenefelt's 450 ichneumonids. But probably as much has been written about the bionomics and taxonomy of the mosquito family as for any other group, and with good reason. For among the Culicidae, or mosquitoes, are the dreaded carriers of malaria, yellow fever, encephalitis (equine and human), filariasis and dengue fever, and some of the most annoying blood sucking parasites of man and his domesticated animals.

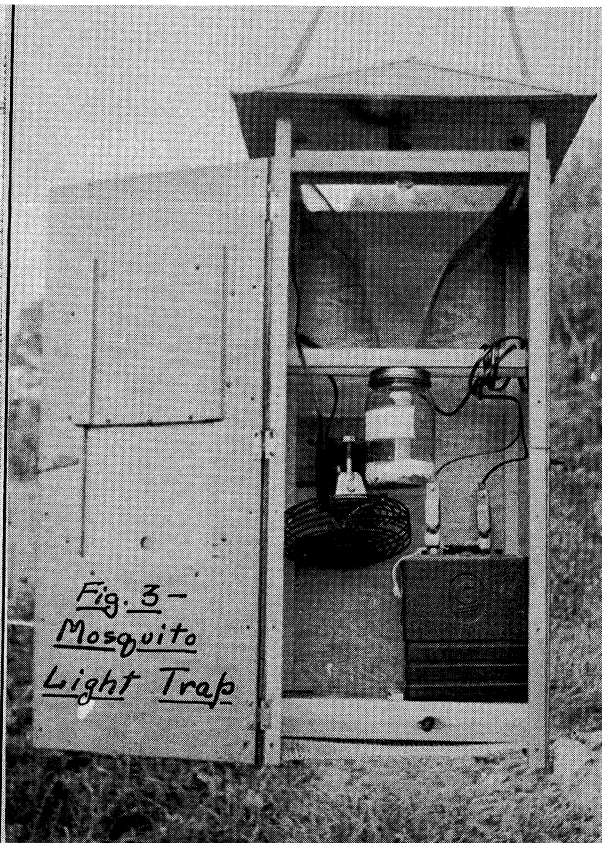
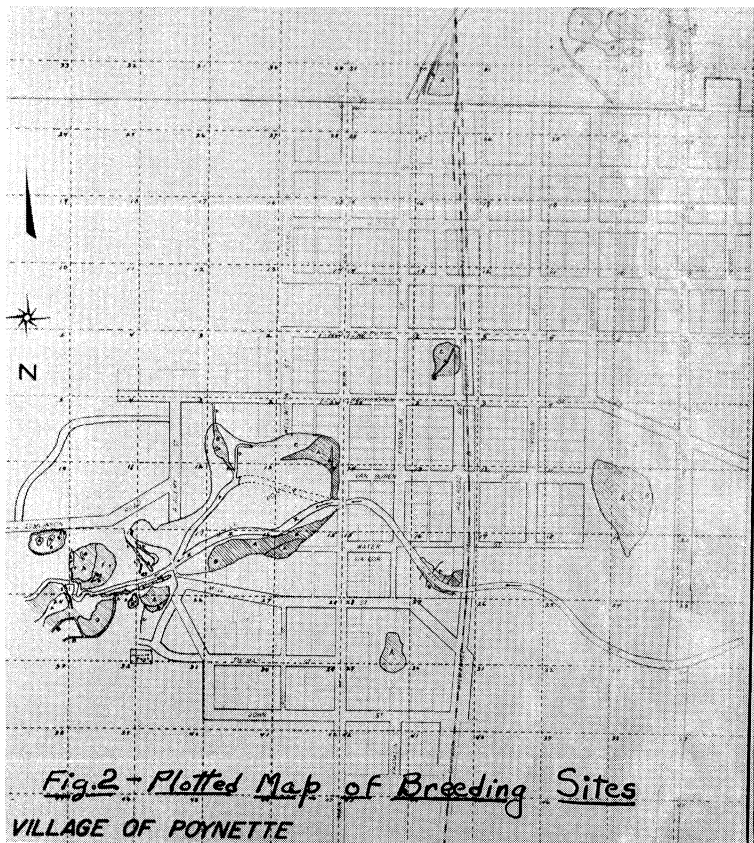
Fortunately, very few of our species are actually enemies of man. Only one of our five species of Anopheles is a vector of malaria, and she (only female mosquitoes are blood sucking parasites) is confined as a problem to a narrow strip of lowland along the Mississippi River. Some of them, such as the huge but harmless Psorophora ciliata, are predators on other mosquitoes during the larval or



"wiggler" stage. And many species do not prefer man as a blood host at all, or do not migrate beyond heavily wooded areas. All of them are interesting to the biologist. Some species have become adapted to peculiar and restricted breeding habitats. The larvae of Wyeomyia smithii, for example, are found only in the water contained in a pitcher plant, and three other species breed only in rain water accumulated in tree holes. One species, the voraciously biting Mansonia perturbans, attaches to the submerged stems of cattails during the larval stage, obtaining its oxygen for respiration from the pithy cavities of this aquatic plant. Under the microscope, some of the mosquitoes are even beautiful such as the handsomely pale scaled Aedes dorsalis or the iridescent Uranotaenia sapphirina.

Only a relatively few species such as Aedes vexans or Aedes trivittatus have brought ill repute to our Wisconsin fauna of Culicidae. These are the persistent biters which attack man and migrate into our residential or recreational areas. They are not vectors of disease, but as pests have become an important economic problem throughout the state. Since World War II, many excellent insecticides such as DDT have been developed for their control, and we have available for the application of these chemicals high pressure mechanized sprayers and foggers and even aircraft. However, before we can effectively and economically control these pests, we must have a thorough knowledge of mosquito habits. Our control programs have failed not because of ineffective chemical and application tools, but because control operators frequently do not know how to use these tools effectively and safely.

The first three stages in the development of a mosquito are aquatic. Eggs are deposited in water or on soil which will eventually be flooded by water. The larvae, or "wigglers," and pupae (or intermediate stage between larvae and flying adults) must have free water for complete development. Mosquitoes never breed in dry land fields (only the winged adults hide in the grass cover of these fields during the day), leaf mold or mud. Although mosquito larvae may be found breeding in nearly all collections of stagnant water, our pest species like Aedes vexans breed almost entirely in temporary situations. Ponds, flooded fields, and small inconspicuous pot holes that fill with water following heavy rains and persist for only a few weeks before drying completely are the major breeding sites for our migratory pest mosquitoes. It is important to know that mosquitoes can complete their immature development in 10 days or less during the warm summer months. Lakes, river, or cattail and sedge marshes and other permanent bodies of water are usually not serious breeding sites for pest species.



In most areas, mosquitoes are most effectively controlled while they are still in the larval stage. Larvae frequently are encountered in fantastic numbers within a very small area. For example, in one pond of 10 square yards with an average depth of one foot, there were approximately 665,000 vexans larvae! These larvae could be easily reached and quickly eliminated with a deisel oil or DDT spray. But allowed to mature to winged adults and dispersed over a large residential area, their control by fogs or residual spray would be difficult, costly and occasionally hazardous.

The secret of effective pest mosquito control is to find the temporary water breeding sites, to keep them under observation, and to treat them only when larvae are encountered. Sampling for larvae on water surfaces is a simple procedure with an ordinary white-enameled dipper (Figure 1 on page 150). Searching for mosquito breeding sites during the bright summer months is not an unpleasant or difficult task for a biologist. Breeding sites encountered in these inspections may be sporadic and temporary and difficult to remember unless they are recorded. A plotted map such as illustrated in Figure 2 is an essential tool. Another effective tool is the light trap (Figure 3) so seldom used in control programs. These traps sample adult populations and give an evaluation of the control obtained, a clue to sources of migrations, or a justification for adult spraying or fogging.

The control of pest mosquitoes is not an insoluble problem. However, we must learn how to use our chemical and mechanical tools properly and motivate them with a sound knowledge of mosquito habits.

# # #

ACKNOWLEDGMENTS: Drawings of water plant (Potamogeton sp.) and blueberry on pages 154 and 156 by Charles W. Schwartz, courtesy Wisconsin Conservation Department. Camping scenes on page 169 from WCD "Wisconsin Water Trails." Sketches of birds on pages 180 and 182 and deer on page 184 by Charles W. Schwartz from advertisement of Aldo Leopold's "Round River" except killdeer, which is from Schwartz's personal envelope.

# # #





## FLORA OF LINCOLN COUNTY, WISCONSIN

By Frank C. Seymour  
Dighton, Mass.

Called the "Gateway to the North" because it includes the southern part of the region of innumerable lakes, large and small, Lincoln County affords a wide variety of habitat and therefore a wide variety of vegetation. As only about half of the County was covered by the Wisconsin Ice Sheet, there is a marked difference between the vegetation of the northern and southern halves, the southern having been covered only by the earlier ice sheet. The northern part is forested largely by evergreens; the southern part mostly by deciduous trees.

Added to the influence of the glaciers or connected with it are the contrasts between rolling hills and level plains; very sandy soil and heavy loam; many bogs and few bogs; many lakes and few lakes. All of these contribute to the variety of the flora.

Coming to live in Tomahawk in September 1949, the writer set out to collect specimens to illustrate the flora of this relatively unexplored country, botanically speaking. Gradually the vague idea of writing and publishing a local flora crystallized. Soon it was discovered that a number of other people in the County were much interested and some of them well versed in the wild flowers of the region. By February 1950, the Wild Flower Club of Lincoln County was organized with 23 charter members, and undertook the project of exploring, collecting and accumulating material for a flora of the County.

Previous botanical work, so far as is known, was begun by L. S. Cheney in 1893. On a trip down the Wisconsin River, he stopped frequently and collected specimens on the way. From July 19 to August 3, a period of 16 days, he was in Lincoln County. In so short a time, he picked up a noteworthy number of species, some of which have not been found in the County since. The second collector to explore the



County was Charles Goessl. In 1915, he made two trips, first early in the season, June 23 to June 26, then returning in September 3 to 10 to gather the late flowers. Each time he followed apparently the same route as Cheney, namely, from north to south along the Wisconsin River. Like his predecessor, he brought in a large number of species, some of which no other collector has located. A few of them must be counted as waifs and not permanent parts of the flora.

From 1915 to the organization of the Wild Flower Club in 1950, only a few sporadic collections were made by various collectors. Their specimens, numbering about 450 species, varieties and forms, were deposited in the University of Wisconsin herbarium and the Milwaukee Public Museum. All were from the more settled parts of the County. Away from the main artery and the Wisconsin River, the country was still botanically unexplored.

The Wild Flower Club, in a series of excursions scattered over the area, began in 1950 to add rapidly to the known flora. Trips, attended by a dozen or even 20 members, brought large results. Some went on the trips merely for the enjoyment of seeing beautiful wild flowers in their native habitat; others collected specimens; and a few kept field records.

As to records, when in a given locality, all species which were discovered in recognizable condition were listed. The importance of the records, about 25,000 in all, lies in their indication of their location within the County. To collect enough specimens to show adequately the distribution over the entire County 30 miles square--900 square miles--was rather out of the question. Only records could practically serve the purpose. To be sure, records are utterly lacking in the scientific validity accorded to specimens, the identity of which can be verified or corrected at will by future investigators. Records can seldom be verified.

Nevertheless, one can scarcely fail to distinguish accurately even in a record between jack pine and Norway pine or white pine; and between the large trillium and the nodding trillium. Therefore, with all its great and acknowledged limitations, such records have important value. Both records and specimens have been used in plotting each species on a map of the County to indicate known range. Different symbols, however, have been used for specimens and records so that the two may be distinguished at a glance.

Species known to occur in any adjacent County although not in Lincoln County were listed for comparison and with

the expectation of finding many of them in Lincoln County. For Lincoln, Oneida, Langlade, Marathon, Taylor and Price Counties, the total number of species, varieties and forms known is about 1400, only about 200 of which have not yet been found in Lincoln County.



In 1949, sad to say, the last virgin forest was cut off. Nevertheless most of the County is heavily forested with second growth. While it boasts of two cities--Merrill and Tomahawk--most of the 900 square miles are sparsely settled. Only in the southeastern part is the land so extensively farmed as to markedly reduce the natural habitats. Up to the present time, the Wild Flower Club has continued its explorations and accumulation of specimens and information.

To the writer of this article has fallen the pleasant task of actually writing the results for a proposed publication to be entitled "The Flora of Lincoln County, Wisconsin." Intended as a means of identifying the ferns and flowering plants of the region, it should assist in further explorations and add to the enjoyment of this part of nature. The text consists largely of dichotomous keys for identification. For each species the habitat and frequency are noted; on occasion, a little further description is given in addition to that found in the keys. In case of any rare or noteworthy wild flower, the name of the one who found it first in the County is recorded. Synonyms are given where needed to facilitate reference for fuller information to Gray's "Manual of Botany" and to Britton & Brown's "Flora of the Northeastern United States and Adjacent Canada." Various books have been consulted to provide English or vernacular names wherever they have been reasonably authenticated. While scientific accuracy is the first aim, special effort has been made to simplify the language and to use more familiar terms rather than the more technical.

The text of this publication is now nearly complete. Illustrations are being prepared, especially figures of parts of flowers which are not easily described and are especially significant in distinguishing one from another. As the known species of the six adjacent counties are included, it will serve a wide area, namely Oneida, Langlade, Marathon, Taylor and Price Counties as well as Lincoln county, to encourage and assist those interested in this subject.

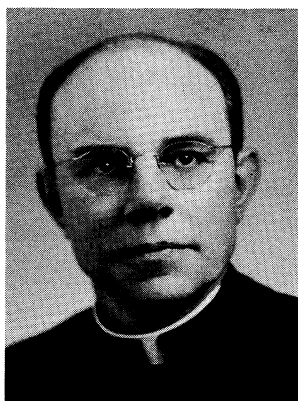
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## EDUCATION: THE HUMANITIES AND THE SCIENCES

By E. J. Drummond, S.J.  
Academic Vice-President  
Marquette University

Put simply, our problem is to educate more and better scientists. . . . Nevertheless, there is a deeper aspect to this question of better scientists or of providing a better education for scientists. Many of those concerned with higher education in and out of the universities and colleges have been concerned with this matter of quality and are giving it searching study. For a number of reasons, particularly over the past several years, questions are being asked about ways of providing more depth and breadth in education; the depth would be provided by science, the breadth by the humanities.



This awareness is good, although I am not sure that I would agree in every instance with each reason cited in expressions of interest in the humanities. Thus, some may think that a larger measure of clearer and more forceful writing, speaking, and thinking would result by offering more courses in the humanities. Others judge that a stronger concern for the humanities would raise the general social acceptance of the scientists, especially those in fields like engineering. Not a few esteem the humanities because they appear to offer both the methods and the materials out of which the student may construct a personal philosophy of life, or at least norms of ethical and moral responsibility. . . .

In order to understand clearly the place of the humanities in education, it would be well to look more closely at certain basic data. I would like, then, to discuss what appears to me to be the real concern which underlies our thinking about liberal education and the humanities. Secondly, I propose to describe the nature of this student we are educating and of that man who will perform as a scientist in our business or factory or school. Finally, I wish to outline briefly the difference between a humanistic and a scientific approach to reality. Once these basic data are clearly understood, we shall be in an advantageous position for dealing effectively with all the practical problems that are involved.

To turn first to the question of our concern for the humanities; actually, it is a concern for man and ourselves. Two generations ago we were sure of our answers and began the twentieth century with the same optimistic spirit that had generally characterized an era which had been opened by the Renaissance itself. But recall the waves of disillusionment which have beat against our culture since 1918. . . .

If we have seen developments in technology and science and have been living in an economic upsurge over the past decade, we

\* - Excerpts from Banquet Address, 86th Annual Meeting, May 4, '56, Marquette University, Milwaukee.

are not so present minded that we cannot recall the breadlines of the '30's nor can we completely disremember death marches in the Pacific, Buchenwald, contrived famines, and forest massacres in Russia. We have watched bitter scenes through one depression and two world wars. Still it is not so much the external violence and the surface bitterness but the disturbance and uneasiness we feel at deeper levels which concern us now. Something is happening to the spirit of man. Our age certainly has not the youthful optimism of the Renaissance nor the brash confidence in formalized reason which marked the Enlightenment; we lack even that middle-aged yet naive trust the nineteenth century had in matter and easy three-dimensioned measurement. Our age finds no real support in the proposals of an absurd individualism called existentialism reacting to a world of absurdity; nor at the opposite extreme does it find comfort in watching men being milled into conformity under the steel rollers of collectivism. . . .

If in our country we are becoming more and more creatures of society, this is not because the Bill of Rights is being directly scrapped nor the God-given rights assured us in the Constitution are being denied. It is because the weight of complicated and organized social pressures has become so great that the individual person tends to forget he is a man and tends to think of himself solely as a part. . . . Basically, we are concerned about western culture and ourselves. We are coming to realize that there are anti-rationalist, anti-humanist forces at work in the world today. We are beginning to understand that these forces are an attack upon our institutions, our research, on our way of life, and upon the spirit of man. . . .

The seeds of darkness as well as the seeds of light lie within the heart of man. We realize, at times more clearly, that it is not enough to train our students merely to be keen and aggressive and to be aware of the latest findings in a particular but limited field of knowledge. It is not enough to know that  $E$  equals  $mc^2$  unless we know more. We know that it is not enough to build the best tractors or transistors unless there is significance to these beyond profits, sales, power, and leadership. There has to be human significance ultimately in terms of love and respect for other human beings. That is what we are after, whether we know it or not, when we are concerned with the humanities.

Fundamentally, then, we are concerned about humanity and human values; we are concerned about man. . . . "Man is a microcosm. He is partly matter and partly spirit, but he is neither angel nor orangutan. He has his economic side, and though economics is a mighty motive in the acts of individuals and of society, there is no purely economic man. He is an individual with rights and responsibilities which he can neither forswear nor be deprived of; yet he is a social being and must live with other men. Man has a composite nature; in understanding his composite nature, he must recognize that there is a duality, that there is a natural and supernatural order, that his destiny is not completely explained in terms of the nitrogen cycle nor his days fully numbered by carbon 14.

"Man cannot overlook nor deny any of his multi-faceted character and live his full life. He must be aware that his cultural and genetic roots thrust far back into history and his future arcs into eternity. And if he over-simplifies anything of his composite nature, he becomes an unrealist. . . . If he keeps conformed to reality by his intelligence, he can choose to maintain that conformity by his will. The more he knows of reality, the more he

freely chooses to conform to it, the more he really is a man." 1

A sound education, therefore, should assist man to understand something of his complexity. Through courses in science it should lead him to know more and more the physical universe around him. Through programs in the humanities the student can come to understand more of himself as a man and of other men. Through his professional courses, be they in law, theology, medicine, or engineering, he learns the knowledge and the practice of a discipline that will earn him a livelihood and, more importantly still, a knowledge and a practice that will enable him to serve God and his fellow man. The humanities are important, therefore, because saint or sinner, engineer, dentist, industrialist, or promoter, the professional man is always a man. Our humanity makes us all blood brothers. This is the common denominator; this is the nuclear material in us all.

What, then, are the humanities and humanistic studies? A colleague of mine [R. J. HENLE, S.J.] who has thought and written considerably about different cognitive approaches to reality, distinguishes among five of them. . . . Using some of his own phrases, I shall describe two of these, the humanistic and the scientific.

The humanistic approach is characterized by a certain fullness or completeness in its handling reality. It does not isolate individualized reality into component parts as a scientist studies it nor uncover it through a series of abstractions as does the philosopher. The humanistic approach engages the whole man as man. It includes operations of the will and intellect, but it also includes emotions and imagination and all the factors that are operative in a man's conscious life.

The scientific approach is a strictly disciplined way of discovering and correlating facts, constructing concepts and theories. Not imagination nor emotions but the human intellect, operating intuitively or rationally, is alone directly engaged in this approach to reality. The scientific method opens the way for an intellectual control of nature on a tremendous scale and for far-reaching applications of knowledge to practical matters. It is concerned with the inter-relation of facts and the organization of data which are related to but do not constitute the ultimate nature of things. It cannot, therefore, drive through to ultimate meanings and explanations of reality.

Thus, you could look at a text of Hamlet scientifically and in several ways. You could study the material as a chemist and by analyzing the paper and ink and making certain historical comparisons reach conclusions about the date of the particular quarto. A philologist and textual critic might use his own skills and learning to establish the date of the publication. Whether these evaluations were made by a professional man of letters or a professional chemist makes little difference; both are essentially scientific. On the other hand, one could read the play or attend a performance of it as a spectator and react totally to it as he watches the drama develop and unfold. . . .

What studies most easily permit the humanistic approach? Literature, language, and the fine arts are generally regarded as

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1 - E. J. Drummond, S.J., The Pursuit of Truth to Make Men Free (Milwaukee: Marquette University Press, 1955), pp. 7-9.

central to such studies because it is in his drama and poetry and his novels, his painting and his music, his sculpture and his temples, that man has set down his record as a human being. Related to these and involved with them are philosophy and theology. History and psychology, anthropology, sociology, and political science also tell us much about man, but these constitute the social sciences and deal with man as a social animal. In their methodology, too, they are distinct from the humanities, for they tend to become either descriptive or statistical sciences.

Yet in any teaching situation involving the humanities and science it is probably as much a question of method as it is a question of matter. . . . Our concern is to educate human beings who can face new situations flexibly, develop new methods confidently, and weigh values humbly and reverently, who can act for their community and serve their fellow men and God. The humanistic approach is important in the total education of a scientist because men are important.

# # #

#### MISCELLANEOUS NEWS

EDWARD T. CAWLEY was recently selected as UW Arboretum Botanist. . . . JOHN T. CURTIS is taking a year's leave of absence from the UW Department of Botany to complete a manuscript on the "Vegetation of Wisconsin" with the support of funds from the Guggenheim and Wisconsin Alumni Research Foundations. . . . GILBERT H. DOANE, UW director of libraries and Academy librarian, has relinquished his UW duties for the 1956-57 year to do a research biographical study on the Rt. Rev. Jackson Kemper. Doane's previous UW duties will be handled by associate director LOUIS KAPLAN during this year. . . . JOHN GUY FOWLKES has now returned from two years in India where he was advising the Ministry of Education. He will now direct a UW training program to improve their science teaching as the result of 20 fellowships established by the Ford Foundation for educators from India. . . . JOHN W. JENKINS, Chief Curator of the State Historical Society Museum, has accepted a position as Assistant Chief of the National Park Service's Museum Branch with headquarters at their Western Laboratory near San Francisco. He will be in charge of interpretive exhibits in the National Parks of that area. . . . Academy life member GUIDO RAHR of Manitowoc has been elected to the State Historical Society's Board of Curators. . . . JOHN G. SURAK of Marquette University has been elected chairman of the Milwaukee Section of the American Chemical Society for their next fiscal year.

The AMALGAMATOR, news bulletin of the Milwaukee Section of the American Chemical Society, has just completed its tenth year of publication. Its new editor is JOHN H. BIEL, Lakeside Laboratories, Inc., Milwaukee 1, and the non-member subscription rate is \$2.00 per year. . . . Also noted for this year are two other anniversaries: the 65th for the Wisconsin Library Association and the 10th for the UW Racine Extension Center. . . . AARON BOHRD recently exhibited 24 paintings at the galleries of FRANK J. OEHLSCHLAEGER in Chicago. . . . The 22nd annual Wisconsin Salon of Art at the UW Wisconsin Union gallery will open with a reception on November 18. . . . OWEN J. GROMME, Curator of Birds and Mammals for the Milwaukee Public Museum, was author of an article in the summer 1956 issue of *The Beaver* entitled, "Bears for Milwaukee - The Tale of an expedition that went north to get four polar bears for the Milwaukee Public Museum." . . . HAROLD C. WILSON of Ephraim, with the help of WALTER SYLVESTER and his students from Wisconsin State College (Stevens Point) banded 2,581 Herring Gulls on Door County off-shore islands this year.

# # #

## STATE'S SCIENTISTS HAVE SERVED DAIRYING

By Andrew W. Hopkins, Emeritus Professor  
Dept. of Agricultural Journalism, UW



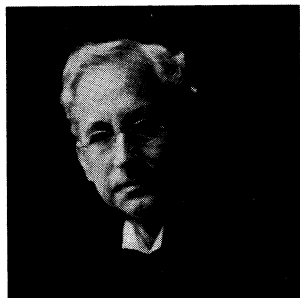
Richly endowed with fine pasturelands, well supplied with pure water, conveniently located near the world's greatest market for livestock and livestock products, peopled by an intelligent and industrious population, and long served by scientists of wide renown and accomplishment make Wisconsin one of the truly great areas for the breeding and rearing of livestock.

No small part of Wisconsin's progress in dairying should be credited to its scientists who, from Dean W. A. Henry and Stephen M. Babcock to the present, have worked zealously and productively to develop and improve the industry. "Babcock could make any institution great which had him on its staff of teachers and research workers." So wrote one intimately acquainted with this modest but fruitful man of science. And it has been Wisconsin's good fortune to have on the staff of its university not only Babcock but a goodly number of other outstanding investigators. Down through the years the efforts of these research workers have been of lasting benefit to the farmers of the state and have brought worldwide reputation to Wisconsin.

### Dairying Supplants Single Crop Farming

Just about the time that this team of pioneer scientists was being brought together under the leadership of Dean William Arnon Henry, Wisconsin farmers were suffering severely from the results of single crop farming and its attendant ills. As would be expected the plight of the farmers of the state soon became the concern of these men.

It was but natural, too, that under the alert leadership of some of the pioneers foremost in the state's civic affairs Wisconsin farmers would turn hopefully from single crop farming to a more diversified type of agriculture combining the production of grain and forage with livestock raising. It was also to be expected that in making the change they would be aided by the able corps of scientists at their university.



Henry

### Noteworthy Staff of Scientists Employed

So it was that, encouraged by such keenly interested public citizens and able administrators as Hiram Smith of Sheboygan County and Elisha W. Keyes of Dane County, Dean Henry set himself to the task of assembling a staff of investigators and teachers. Whether or not they knew it, theirs was to be the task of helping to redirect the agriculture of the state and to aid in laying the foundations for what have become investigations of world-wide significance and influence.

The group of scientists then assembled at the university included, in addition to Dean Henry, Henry P. Armsby, Stephen M. Babcock, Franklin H. King, and Harry L. Russell. To this able staff were in turn added such productive investigators and teachers



as Gustav Bohstedt, John Craig, Conrad Elvehjem, James G. Halpin, Edwin B. Hart, Edwin G. Hastings, George Humphrey, Elmer V. McCollum, Paul Phillips, Hugo Sommers, Harry Steenbock, Andrew R. Whitson and others.

#### Seek Adequate Nutrition for Healthy Livestock

In the short space of this article it will be impossible to do more than to list but a few of the important discoveries made by these research men and to give some of the highlights in their development. It should be pointed out, too, that although a botanist by training, Dean Henry envisioned the important role which livestock would play in the development of the agriculture of the state. He saw too the commanding need for adequate nutrition if we were to have a healthy livestock industry.

To aid in carrying on this important work Henry brought Babcock from the East and as possibilities for service to Wisconsin stockmen were revealed one after another of a long line of investigators - Hart, McCollum, Steenbock, Link, Phillips and the others named above, were added. And out of the laboratories, manned by these investigators, has come a long line of important results.

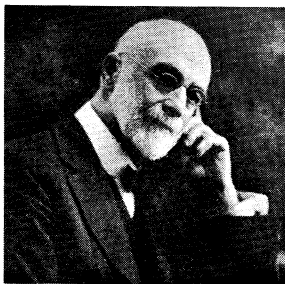
#### Alumni Plan Support of Research

Easily one of the most far reaching by-products of research effort upon the University of Wisconsin campus was the organization and development of the Wisconsin Alumni Research Foundation founded to support further scientific inquiry. Much of the credit for the formation of this organization, the plan of which has been copied in many states, should go to Harry Steenbock and George I. Haight, often named as Wisconsin's No. 1 alumnus. WARF, as the foundation is called, contributes annually many thousands of dollars for the conduct of what promises to be research of significance.

It was the pioneer Wisconsin educator and scientist - Henry - who soon saw the need for bringing together, in a single volume, all the known information on the efficient feeding of farm animals. Early in his long and helpful service to the livestock industry he authored and had published a reference book on feeding which has continued to be the accepted standard guide for the economical and efficient feeding of livestock. In later years it has been revised by Frank B. Morrison who had previously joined Henry as co-author.

#### Much Nutritional Research Started Here

It perhaps was but natural that here in Wisconsin the modern era of nutritional research would have its beginnings. Research, started under the leadership of Henry and Babcock and later carried on by Edwin B. Hart, Elmer V. McCollum, Harry Steenbock, Conrad A. Elvehjem, and others, has made vast contributions to animal and human welfare throughout much of the world.



Babcock

The original inquiry stemmed out of Babcock's unwillingness to accept the then prevalent notion that a fully balanced ration could be made by combining feeds from their chemical analysis. In these beginning nutritional experiments Babcock and his co-workers fed equal lots of calves rations derived respectively from the entire plants of wheat, oats and corn. The experimenters set themselves the task of learning if these various rations would be of equal nutritive value for growth and maintenance of vigor. They found that

at the end of the first year the lots of calves fed these various rations showed marked differences. The corn-fed lot was sleek and apparently in good condition. The wheat-fed calves were rough-coated and otherwise in poor condition. The oat-fed group was in between the other two. Yet the three rations were alike in so far as chemical analysis was concerned. The investigators had a right to conclude that chemical analysis did not supply the answers.

#### Babcock Laid Foundations in Vitamin Research

In their search for the causes of the differences in the condition of the lots of calves scientists turned to the feeding of smaller short-lived animals on purified food stuffs. In this way they were able to pin down the deficiencies in certain grains and determine the need for certain substances in feeds to make possible adequate nutrition. These substances were termed vitamins. Thus did Babcock and his associates lay the foundation for the epoch-making discoveries of vitamin research and the role of mineral elements in the nutrition of animals and man.

#### List Babcock High Among Wisconsin's "Greats"

Because of his fundamental work in nutrition and in other fields all informed would agree this name would be entitled to high rank in any list of Wisconsin "greats." Babcock, transplanted here in early manhood from New York State, worked long to push back the frontiers in learning. Working zealously at the University of Wisconsin he, perhaps more than anyone else, should be credited with laying the foundations for research in the field of nutrition.

But as important as were these inquiries perhaps Babcock was best known to the general public for the invention and perfection of the dairy test which bears his name and which has often been credited with revolutionizing the dairy industry. It has been said that there is not a herd of dairy cattle in the state which has not been improved by the test which, unchanged in principle, continues in use to improve the productive power of herds throughout the dairy world.

#### Russell and Babcock Teamed Together

Closely associated with Babcock in a number of fruitful investigations which have benefited the agriculture of this and other states was Harry L. Russell, for two or more decades the dean of the Wisconsin College of Agriculture. Seeing the need for holding cheese in storage this pair of investigators worked out the process for the cold curing of cheese. Of inestimable value to the cheese industry, this process has often been termed the foundation upon which the cheese industry has been built. It has made possible the holding of quality cheese to improve its flavor and to feed the market as it needed the product.



Russell

Russell, of course, working singly made many other contributions to the well-being of Wisconsin agriculture. To cite but one of far reaching importance was his introduction into the state of the tuberculin test. This device has helped to rid Wisconsin herds of bovine tuberculosis which at one time threatened our entire dairy industry. Collaborating with Russell on projects affecting the health of our herds was Hastings who often served Wisconsin stockmen through the offices of the State Livestock Sanitary Board.

### Contribute to Development of Artificial Breeding

Although progress in artificial breeding of dairy animals has been made by investigators in other states and countries, Wisconsin scientists have taken a prominent part in its development. While this system has been employed successfully with various types of livestock it likely has been most used in the improvement of dairy cattle. And because of its many advantages and its wide use it is generally considered the most important breeding development that has been made in many years.

Early in the development of this method of breeding a limit in its use was found in holding the semen except for short periods of time which of course shortened the distance which it might be transported. Paul Phillips and Henry Lardy sought to find a means of keeping the semen fresh for longer periods. They found it possible to enclose and preserve the semen within egg yolk solution. This finding has been of great significance and has made possible the use of sires and dams owned at longer distances apart and has permitted the employment of much wider selection in breeding. Discoveries made by the Wisconsin scientists formed the basic foundation for the artificial insemination industry practiced today and an essential step in the processing of frozen bovine sperm.

### Concentrated Milk Gives Promise

Scientists at the University are now conducting 36 food research projects. Of these all but ten have to do with dairying. A new dairy product - fresh concentrated milk - has been developed which gives promise of being of much service to many milk consumers and an aid to dairymen at times when the industry is burdened by a surplus. The fresh concentrated milk, when mixed with water, tastes like fresh milk. In its concentrated form - with two-thirds of the water removed - the milk has very good keeping qualities. The product, it is claimed, still has a fresh milk taste after several weeks storage in the refrigerator. This concentrated product could be shipped to distant areas at a relatively lower cost.

While concentrated milks have been manufactured before, there has always been one main drawback - the high temperatures used to drive off the water and obtain good keep qualities have usually given a "cooked" or "chalky" flavor to the product. Cooperating with dairy equipment manufacturers, the Wisconsin scientists think they now have a process which will be commercially practical and a product which will be accepted by the consumer.

### Whole Milk Tops for Calf Feed

Research workers in dairy husbandry have found that veal calves will gain faster, more efficiently, and will dress out better on whole milk rations than on limited amounts of whole milk or milk replacer and starter. Holstein calves fed all the whole milk they wanted gained an average of 2.5 pounds daily until they were slaughtered at 6 weeks. That's compared to a daily gain of 1.5 pounds for calves on limited milk plus starter and hay (the common farm practice) and 1.3 pounds for calves on a ration of milk replacers with starter and hay. The 19 calves on whole milk rations dressed out at around 70% while the other rations produced calves with dressing percentages averaging around 63%.

### King Developed System of Ventilation

In Franklin H. King this state furnished one of the most outstanding agricultural engineers of this country. His contributions to better dairying and improved farming were most generous and important. He not only won national but international recognition

for his significant work as an agricultural engineer and physicist. While in no way discounting the results of his other work perhaps many would rate as King's greatest contri-



bution to the dairy industry the development of the King system of barn ventilation. This undoubtedly did much to improve the health of dairy animals. And upon his pioneer work much of the later development in barn ventilation has been built.

#### New Crop Varieties to Feed Livestock

Paralleling the research which Wisconsin scientists have done in animal nutrition is the work in plant breeding done by Lawrence F. Graber and his associates. This painstaking research, aimed at the more regular production of better pasture and hay crops, has paid dividends in the form of greatly increased yields of superior forage. Let us take the results from the development of a new variety of alfalfa. This variety, named Vernal, has repeatedly sprung back after hard winters to produce good yields of quality hay while other varieties have winter-killed leaving the soil open to erosion and to the invasion of weeds and low quality grasses. The extra acreage of alfalfa made possible by the development and introduction of Vernal is very highly important to Wisconsin's livestock agriculture.

But Wisconsin scientists have other results from their work with plants and animals. Oftentimes Wisconsin's agricultural research has yielded benefits not only to farmers but to many a long way from farms.

#### Dicumarol Important in Hospital Operations

A good example of this is the development of dicumarol, a chemical often used by surgeons to prevent clotting of blood. This development came when Wisconsin scientists tried to learn the cause of cattle deaths from sweet clover disease. They pinned down a substance in spoiled sweet clover hay which thinned blood in animals that ate this moldy forage.

Out of this experience Karl Paul Link went on to develop dicumarol which surgeons often use when operating and doctors give when treating certain types of heart disease. One finding leading to another, the scientists employed the blood thinning property of dicumarol to develop a chemical cousin called warfarin, the most effective rat killer known.

Many more developments out of the laboratories of the university could be cited to show the great service of Wisconsin's scientists to dairying, but limited space will not permit. It must suffice to say it is not an over-statement to repeat that whatever success Wisconsin has had in dairying has been due to the state's rich endowment of needed natural resources, to an intelligent and industrious population, and to the zeal of its scientists, ever alert to aid in the production, manufacture, and distribution of milk and milk products.

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**Editor's Note:** For well over a quarter of a century (37 years) Professor ANDREW W. HOPKINS was the Editor of the College of Agriculture, the Agricultural Extension Service and the Agricultural Experiment Station. For 15 or more of those years he also served as Secretary of the Wisconsin Life Stock Breeders' Association. He now has Emeritus status.



## DOMAIN OF LETTERS



Academy member HARRY HAYES CLARK of the Department of English at the university of Wisconsin contributes his ideas on an aspect of the inter-relationship of the study of American civilization.

Active in her own community, Academy member Mrs. RUTH MOREHOUSE of Woodruff has served constructively in editorial capacities with Creative Wisconsin, publication of the Wisconsin Regional Writers Assn. Mrs. Morehouse has won repeated distinction in poetry contests; her work has been termed elemental, emotionally sincere and stirring, disciplined and elevating.

## RELATIONSHIP OF AMERICAN LITERATURE TO AMERICAN HISTORY

By Harry H. Clark  
Department of English, UW

Since the colleges of Wisconsin and Northern Illinois have now formed an official branch of the American Studies Association dedicated to an approach emphasizing the way the various college departments and disciplines can supplement one another in illuminating American civilization in its full circumference, it may be useful to summarize how the study of American literature can contribute to such an end. In what areas do American literature and American history, for example, intersect? What aspects of American literature may be illuminating to a historian of our civilization as it has developed?

(1) If in a democracy votes depend upon public opinion, then the extent to which that opinion is shaped and moulded by literature would seem to be an important phase of explaining why the majority vote as they do. Consider the persuasive techniques of The Federalist Papers in getting the Constitution adopted, Uncle Tom's Cabin in converting the majority to abolition, and Upton Sinclair's Jungle in arousing agitation for legislation safeguarding our food.

(2) Granting an element of chance, most institutions and major historical events usually develop out of fairly carefully formulated policies, somewhat as architecture develops out of an architect's blueprints. If a foreigner, for example, wished to understand the basic pattern of what the democracy of the liberal Founding Fathers was supposed to represent, Thomas Paine's Rights of Man, Part Two, would probably be as illuminating, for broad purposes, as the pulling and hauling of individuals in the party struggles of the day.

(3) If democracy involves adherence to majority wishes as a norm, then the changing norms in literary satire, and the use of laughter as the weapon of society to enforce conformity to the normal conduct or customs of a given era are illuminating. Our literature has been rich in such satire, from H. H. Brackenridge's Modern Chivalry through Mark Twain's Innocents Abroad to Sinclair Lewis' Babbitt.

(4) If emotional preferences or prejudices are now recognized as influencing conduct and the history of events nearly as much as cold logic and syllogisms, then such emotional urges can be sampled fruitfully in lyric poems, familiar essays, and personal letters written behind the scenes. We need not only to know what happened, but why; and often so-called little things, such as the clashes of the personalities of the leaders, as revealed in letters and reminiscences, are illuminating as to how trends began.

(5) If taste shows character, then the great popularity of certain writers (Longfellow, for example) helps to illustrate the kind of life large portions of our people had a taste for, the kind of character they wanted to be like. The history of books that have been "best sellers" (as James Hart has shown) is an especially significant index to American popular taste.

(6) Literature can be especially helpful in advancing an understanding of international relations on the people-to-people level. The American image of Europe is greatly illuminated by travel books written by Americans, and may be sampled in Philip Rhav's anthology, The Rediscovery of Europe. Conversely Europe's image of America, reflected in its political and military conduct toward us, was strongly conditioned by American books widely read abroad, from Cooper's idealistic Leather-Stocking to Jack London's predatory portrait of the Sea-Wolf. Was not Russia's conception of Americans considerably influenced by the fact that they say they bought and studied more than three million copies of Jack London's books up to 1913? How did American reading habits influence our views of Europe?

(7) American periodicals, as mediating between literature and the general non-academic public, offer great help in enabling the historian to chart changes in public taste and in the psychology of persuasion connected with all sorts of "causes" and reforms, as F. L. Mott's three-volume History of American Magazines has illustrated.

(8) Literature, especially novels, is useful in illuminating the finer nuances of social mores and the ideals of conduct of one sex toward the other, from Cooper's heroines that his men idealized, to the naturalistic ones of Theodore Dreiser. What special qualities did men and women find desirable or objectionable in one another in different eras, and why?

(9) If from the birth of the nation we have been dedicated to "the pursuit of happiness," the more confessional phases of literature, including private letters, should do much to enlighten historians as to the end-result of such a pursuit in successive eras. Lewis' Rabbits, for example, helps to point up the paradox that along with all our vaunted progress in mechanization and gadgetry, such standardization appears to have ruled out much creative individuality and to have led to a great deal of unrest and lack of the kind of happiness and self-reliance one found in the Age of Emerson.

(10) The history of entertainment, of what individuals voluntarily chose as pleasing and enjoyable in their leisure hours, week-ends, etc., can be supplemented by the study of the larger implications of what the literature of amusement (cf. Irving, Poe, Mark Twain) included and excluded. What did we laugh at most in successive eras? And students of literature can benefit by studying the history of entertainment in the parallel arts - painting,

the theatre, music, etc. Changing concepts of what is beautiful and what is ugly have an obvious significance.

(11) If Vernon Parrington, brilliantly as he analyzed the "Main Currents of American Thought," occasionally neglected the element of art and imagination (in writers such as Poe and Henry James), Robert Spiller in his recent *Cycle* has suggested solving the difficulty by focusing on the "symbolic illumination" of history through our literature, subordinating literalism and surface facts to the deeper truths of human nature given imaginative representation. And Henry Nash Smith, especially in *Virgin Land*, illustrates the fruitfulness of interpreting literature dealing with the West in the light of changing myths of longings that explain the motives for "westerling." As Hamlin Garland said, "all of the associations called up by the spoken word, the West, were fabulous, mythic, hopeful"; but this myth often collided with a different reality. Literature, however, can help us understand the motives which drove men in their hope of independence and freedom, wishful thinking as powerful, perhaps, as economic statistics in explaining why men acted as they did in the face of all sorts of hardships.

(12) Finally, if the general over-all trend in modern social studies is from monism or an absolutist concern for one "law" or "thesis" explaining all human history, toward pluralism and a tolerant and open-minded willingness to consider multiple hypotheses on an inductive basis, then history and literature and other social sciences would all seem to deserve respectful study as supplementary parts of the full-circumference development of American civilization. Such an approach, avoiding absolutism and a priori theories, might provide for and benefit from experimentalism, flexibility and a change of emphasis suitable to different authors, periods, and historical phenomena, and the variousness of human motivation. The literary student's obligation to deal with symbols and whatever artistic devices spring the imagination (as in Frank Norris' *Cetopus*) could be woven into the larger purpose of considering our authors as in part the spokesmen of the civilization which produced them.

# # #

#### A NOTE ON THE COVER PAINTING

IRMA CHIPMAN, an amateur painter, one of the two thousand participants in the flourishing Rural Art Project conducted by the College of Agriculture in the University of Wisconsin, painted the design which appears on our cover. She calls it, simply, "Birch Stump," and she gives her reason for painting the canvas thus simply: "I love trees and was intrigued by the beauty and color in this dead birch stump."

Formerly a teacher, Miss Chipman has experienced farm living for eleven years. She now resides in Wautoma, Wisconsin. That she is not a painter of vast experience is attested to by the fact that this is the first of her paintings to be shown in the annual rural art exhibition at Wisconsin's Memorial Union galleries. Miss Chipman does display, however, the characteristic love of the rural painter for the familiar subject. Technical skill here gives way to insight and tenderness. These are among the qualities which cause the professional painter to look at the work of the good amateur with respect and sometimes with envy.

---Aaron Bohrod



## A NORTHERN MAN

His gaze is like no other, for it comes  
Through balsam boughs or from a cedar marsh.  
Softened by green it is; yet it can plumb  
Distances over snow, and skies grown harsh.

His mind is different too. It has the feel  
Of crisp brown velvet which a deer has shed  
From pointed horns. It echoes to the heel  
Set down upon a creek's December bed.

Nor is his heart like any that you know.  
It can be quiet as a shadowy fox,  
Or humorous as an otter. It can grow  
The look of swans or sunlight over rocks.

And when he speaks, a music will be heard  
Which gathers trees and water in a word.

--Ruth Morehouse





## OPINIONS OF COLLEGE FACULTIES ON GENERAL EDUCATION

By Gerald G. Reed  
Wisconsin State College, Oshkosh

There is a wide divergence of opinion among educators today as to what type of education is most effective in college teaching. Especially has there been disagreement as to the effectiveness of General Education methods in college teaching. To get a gauge of the drift of teacher opinion on that subject a survey was made of the educational beliefs and practices of college teachers in Wisconsin.\* The teachers were polled as to what principles of General Education they used in their teaching, and also as to what their opinions were as to the effectiveness of General Education methods.

Integration: A principle of education which is considered characteristic of General Education is integration - integration of courses, integration of fields of learning within a subject, integration of all the fields of interest of the student. The teachers in the survey were asked how much they practiced integration in their teaching and what they thought the extent of integration in the college should be.

Laboratory Teaching: Science teachers in this survey who taught laboratory courses were asked if they integrated their laboratory work with other courses taught in the college and if so, how much. In answer to the first question, 42 answered "yes," two "no." Nine said "only incidentally," and five said they "tried to." Forty did not answer the question. Thirty-four made comments that indicated they followed some practice which approached integration in one way or another.

When they were asked if the orthodox sequence of laboratory subject matter (by text book method) satisfied the basic principles of learning as well as the "integration and life needs" basis did, most of those who answered the question (60) said it did not. The impression was, though not statistically validated, that very little General Education is practiced in laboratory teaching, that a majority of the teachers realize this and feel that General Education methods would improve the laboratory learning but do not know how to institute such methods.

The teachers of non-science subjects showed varying degrees of endorsement of integration. They were asked what subjects they thought should not be subject to integration. One third (34%) thought that technical and professional courses should not be integrated. Several thought "specialized fields" and advanced courses as a class did not readily yield to integration. Twenty-one per cent stated that advanced mathematics and advanced science courses should be left out. Six percent said that no graduate subject should be subject to integration.

Willingness to Diversify: The teachers' belief in integration were further tested when they were asked what subjects other than

\* - The study was in two sections, one conducted in 1952-53 among Wisconsin college teachers; and the other in 1955-56 among college teachers in Minnesota and Illinois.

Presented at 86th Academy meeting, May 4, 1956, Milwaukee.

their specialty they would be willing to teach if they were assigned to a course of study which integrated their specialty with other subjects.

TABLE V

DEGREE OF WILLINGNESS OF TEACHERS TO COOPERATE IN A PROGRAM OF INTEGRATION BY TEACHING SUBJECTS OTHER THAN THEIR OWN

Teachers Willing to Teach					
A Wide Range of Other Subjects	A Narrow Range of Other Subjects	One Other Subject Only	Unable to Teach Any Other Subject	Unwilling To Teach Any Other Subject	Undecided or not Answering
75	90	8	7	14	36

From the table it can be seen that while many were willing to cooperate to some extent, only 32 percent were willing to do so to any marked degree. It seemed that many of them were reluctant to have their specialty de-emphasized by integration with other subjects.

**Life Needs:** Another teaching practice often emphasized in General Education is adapting the teaching to the life needs of the student. This survey questioned the teachers as to whether they thought the courses now taught, and the practices now followed to balance the college curriculum satisfied the real life needs of the student. They were asked if they thought the application of more General Education principles would do a better job of satisfying life needs. The answers given to the first part of this inquiry are shown in table IV.

TABLE IV

OPINION OF EFFECTIVENESS OF PRESENT COURSE ASSIGNMENT

Does Registrar's Assigning and Counselor's Guidance Meet Student Needs?			
Non-committal	Yes	No	There are limiting circumstances
20	55	129	49

Six teachers said they lacked information to answer the question. Ten said graduation requirements and rules on transfer of credits put limitations on any system of assigning programs but that they thought that within the range of these limitations the present system was doing as good a job as could be expected. Twelve said it was impossible to meet "all" the needs.

The majority, 50.5 percent, were of the opinion that the present system of designing the college program by action of registrar, advisor, student and department committee on requirements does not integrate the courses sufficiently to meet the student's needs.

**Type of General Education Course:** The teachers were questioned as to the type of General Education they thought was best for college. For example they were asked if they favored the "Core Course" type of General Education. Their replies are in Table III on the next page. The table shows that the most, 29.4%, were in favor of "present courses integrated," with "a broad integration of present basic courses" as a second choice.

TABLE III

## TYPE OF GENERAL EDUCATION PROGRAM PREFERRED

A	B	C	D	E	F
A Broad Integrated Course in Basic Areas	A Core Course	The Present Courses Integrated	Limited to the lower Divisions of the College	None	No Answer Given
61	29	74	49	6	32

At What Level: There is often the question as to whether General Education is unworkable at certain levels of instruction. The opinions of the teachers is shown on this point in table III. They showed a considerable preference for limiting it to the lower levels of the college. Seven of them, however, wrote comments indicating they thought it should be in the senior year. This latter group does not show in the table.

Value of General Education: To consolidate the thinking of the teachers on various angles of the question they were asked whether they believed a philosophy of General Education could contribute to the strength of the college program. Graph I shows their answers. The graph shows that the vast majority of the teachers, 91%, feel that General Education would help their college program; 45% voting "somewhat;" 46% voting "much." Their attitudes, as revealed by statements elsewhere in the questionnaire, indicated they did not believe as strongly in the value of a General Education program as their answers indicated. Many of the answers ("much," "somewhat," etc.) were qualified by comments the questionnaires added to their questionnaires indicating they had reservations as to endorsement. The graph shows that in this teacher population the opinion is strong that General Education adds to the strength of a college program. (See next page)

Faculty's View: They were also asked what stand the rest of their faculty took on General Education. Their replies of course constituted second hand information and could not be taken as reliable or valid, but they were a fair indication. Their opinions are shown in Table II.

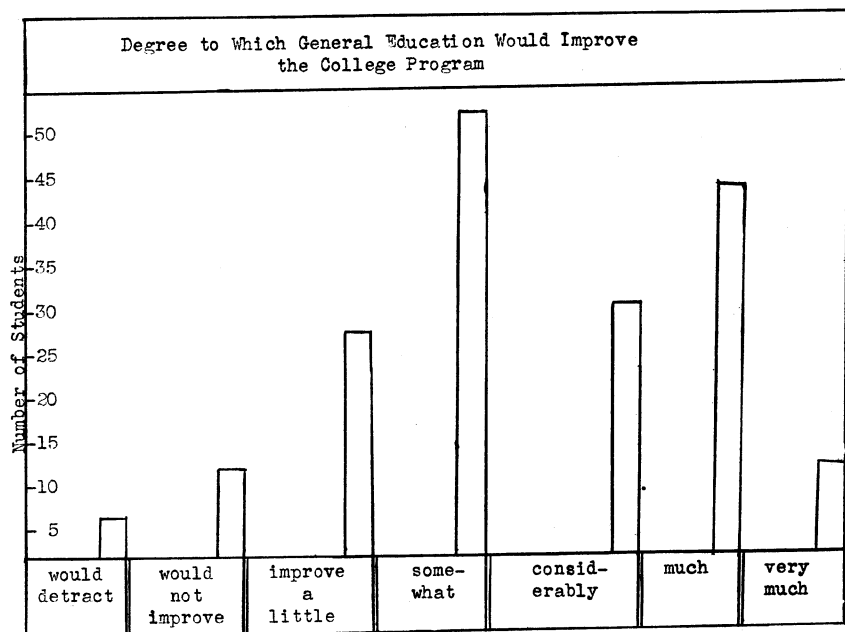
TABLE II

WHAT THE TEACHER BELIEVES THE FACULTY STAND  
ON GENERAL EDUCATION TO BE

Faculty Believes General Education					
1	2	3	4	5	6
Is Shallow	Is Inadequate	Is for the Lower Levels of the College	Equips the Student Better for Life Adjustment	Prepares for Life as Well as Subject Matter Does	No Answer
16	16	20	56	28	10

Nine said they could not answer for their faculty; 17 that they thought their faculty held opinions that were mixtures of two or three of these opinions.

GRAPH III



The general opinion here seems to be that General Education "equips the student better for life adjustment." Thirty-eight percent of those giving an opinion stated that as their opinion. A considerable number, 20 percent, voted that it prepares one to meet life needs as well as "specialized subject matter" teaching does; which reply we took to be a degree less emphatic belief in the effectiveness of General Education than the foregoing category was. We took the two together as indication that a majority of the teachers, 58 percent, believe that in over-all learning or teaching, over wide areas of education and culture, General Education is better training for the student than subject matter teaching is.

However, when the replies to this question were viewed in the light of replies the same teachers gave to other parts of the questionnaire, their answers did not seem quite hearty endorsements of General Education. For instance, their attitude often seemed to indicate that they considered their answer to say: "There are many items of information and training which General Education does not teach too well, but it gives a better general training in life adjustment." The fact that these same teachers in other answers indicated that there were several specialized subjects that should be left out of General Education; that they thought their specialty was already integrated well enough; and that certain principles of learning in the specialty (such as accuracy, reverence for truth, analytical frame of mind, etc.) would be slighted under General Education indicated that they took that answer to mean only partial endorsement. Similarly, there were indications that they took "General Education prepares for post-college life as well as subject matter-centered education does" to mean "as well as" but not "better than."

Position of the Administration: The teachers were asked what stand the administration of their college had taken on General

Education. The questionnaire revealed that, in Wisconsin at least, the vast majority of them are studying it, encouraging their faculties to study it, and are seeking to implement it in their systems. When asked if their administrations indicated any objectives of General Education toward which they might work, 68 percent of those who answered said "Yes." Only 12 percent answered "No." Many of them replied with descriptions of the administration fostered investigations that are now going on, such as General Education committees, in-service study programs, delegates to central committees, curriculum revision committees, and work on the North Central Study Commission.

On the opposite side of the ledger were a considerable number of teachers who did not know of certain projects of investigation of General Education and curriculum revision which were going on in their schools or were not interested enough to ascertain the nature of it.

# # #

### WISCONSIN ACADEMY COUNCIL MEETING

By Francis D. Hole  
Secretary-Treasurer

A meeting of the Academy Council on September 15, 1956 was called to order by President DARLING in the Soils Department Library at the University of Wisconsin at Madison. Council members and staff present were: R. N. BUCKSTAFF, C. G. CURTIS, S.F. DARLING, R. J. DICKE, C. L. FLUKE, F. D. HOLE, O. L. KOWALKE, J. A. LARSEN, KATHERINE G. NELSON, L. E. NOLAND, A. W. SCHORGER, W. E. SCOTT, and J. W. THOMSON, Jr.

New members listed on page 128 of the 1956 Summer issue of the Academy Review were accepted, together with the following members whose applications have been received since then:

- Active - OTIS S. BERSING, Conservation Dept., Madison  
BURTON L. DAHLBERG, Conservation Dept., Spooner  
FRANK A. IWEN, Zoology Dept., UW, Madison  
FRED H. KAUFMANN, Botany Dept., UW-M, Milwaukee  
Mrs. RUTH MOREHOUSE, Author and poet, Woodruff  
CHARLES H. STODDARD, Forestry Consultant, Washington, D.C.  
Miss HARIETT M. SWEETLAND, UW-M, Milwaukee  
Mrs. JOHN C. WARNER, Milwaukee
- Library- MADISON FREE LIBRARY, Madison

New members since the Council meeting are:

- Active - CLIFFORD R. HAYMAKER, Chemistry Dept., Marquette U., Milw.  
L. P. JERRARD, retired civil engineer, Winnetka, Ill.  
Mrs. MARTIN FAUST, Jr., creative writer, Richland Center

Items of business discussed and transacted were:

1. The Council accepted with gratitude a gift of \$50.00 to the Junior Academy from the FALK CORPORATION, Milwaukee. Also, a gift of \$25 to the Junior Academy prize fund has been received from A. W. SCHORGER, former president of the Academy and long-time Council member.
2. It was agreed that a brochure should be prepared explaining exactly what the Academy is, what it does, and what it needs.
3. The Treasurer was instructed to send a check for \$7.00 (\$1.00 for every 100 members) to the AAAS for the Academy Conference fund.

4. The Secretary was instructed to send a letter to AARON BOHRD, expressing appreciation for his service as Art Editor to the Review during the past two years.
5. Mr. Scott announced that in the summer of 1957 a new Directory (alphabetical) will be published in the Review.
6. Mr. Fluke reported on the sale of reprints. The Council asked the Secretary to provide an inventory, at the next meeting, of back volumes of the TRANSACTIONS on hand.
7. The Library Subscription Committee was dissolved, having discharged duties assigned.
8. Mr. Schorger reported that there is no change in investments.
9. Mr. Thomson reported that the La Crosse committee of the Junior Academy has set the date of April 13 for the Western District meeting at Eau Claire.
10. The Council asked President Darling to arrange place of meeting for the Academy in the spring.
11. Mr. Larsen distributed mimeographed copies of the table of contents of the 1956 TRANSACTIONS (Vol. 45) and a partial table of contents of Vol. 46.
12. The Council agreed that the Secretary should put away (withholding from sale) 20 copies of each issue of the Review.
13. Because of increased demand for the Review, the Council decided that 900 copies of the Review should be printed from now on.
14. The Council agreed that Academy records should be given to the Historical Library, and not discarded.
15. In order to boost membership, it was suggested that
  - a. We have a complete alphabetical list of members for all years past.
  - b. 5,000 copies of the application folder be printed.
  - c. A letter go out to each Academy member enclosing an application folder, and urging that old members secure new ones. The letter should offer 1956 and 1957 TRANSACTIONS plus 5 Reviews to members joining in the Fall.
  - d. That we find out from AAAS who the Wisconsin residents are who belong to Academies in other states, but do not belong to our Academy. We should invite them to join us.
16. The Council adjourned at 5:00 p.m., to meet in the winter.

# # #

#### COMMITTEE ON WATER POLLUTION - PROGRESS REPORT

As of the first of this year, Academy member THEODORE F. WISNIEWSKI, Director of the Committee on Water Pollution, issued a progress report on the status of pollution control orders put out by his committee. This was summarized in an attached table along with other details, but the basic facts which express significant progress are as follows:

The number of orders satisfied in 1955 totals 68. Those issued in the period 1948 to 1956, less the revisions, amount to 992. Of these, 316 have been satisfied. There are now 55 projects under construction, and 22 have plans approved. Engineers retained by 94 are now preparing plans for improvements.

Over the years, a total of 58 cases have been turned over to the Attorney General to gain compliance. Of the cases referred to the Attorney General, 22 have been completed. 5 are under construction, 3 have plans approved, 12 have engineers retained. Completion of the remainder will depend on the solution of legal and financial problems.

During 1955 detailed surveys were completed in 4% of the area of the state, bringing to completion the basic survey designed to determine location of sources of pollution. # # #

## JUNIOR ACADEMY NEWS

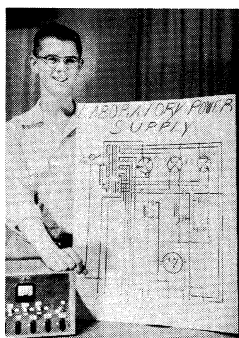
By John W. Thomson, Jr., Chairman  
Junior Academy Committee

The American Association for the Advancement of Science has changed its research support policies with respect to the grants given to the State Academies. This grant will now be given for the support of research projects by high school and college students and is to be given in such a way as to assist as many young scientists as possible. The amount available each year is determined by the number of members of the state Academy who are also members of the A.A.A.S. Currently the fund amounts to \$88 for the Wisconsin Academy. The Academy Council has decided that this will be distributed with the help of the Junior Academy and has just started plans for the program. The exact method of administering this A.A.A.S. grant had not been determined at the time of writing this note.

- - -

## A LABORATORY POWER SUPPLY

By David Krey  
Reedsburg High School



The project which I presented at the district and state Junior Academy of Science meetings was a laboratory power supply. I had thought about building my supply about ten months before it was finished to present. After my decision I began looking for schematics or circuit drawings of power supplies. Looking and observing for some time, I did not find the schematic for a supply that would fit my needs. Therefore I designed, entirely, my own schematic so I would have a supply that would positively fit my requirements. After my schematic was finished I began getting the various parts that I did not already have on hand, and I also got my chassis ready for the parts.

This is where I ran into one of my biggest problems which was getting some of the parts I needed without going into too much expense. I could get electrolytics of 600 volts, for example, but the price was way beyond my means. So I hooked two electrolytics at 450 volts and 30 micro-farad in series which gave double the voltage and half the capacity; that is, 900 volts and 30 micro-farad.

Another problem was obtaining tubes for the various voltages. I solved this by using tube guides and manuals. I also had to decide how I could get such an efficient supply without making the supply large and bulky. By having a second layer inside the cabinet, I made the whole supply compact.

As I have mentioned, one of the main points of ingenuity is that the entire circuit is my own design. By designing my own circuit I have cut down a lot of inefficiency and have made the supply more valuable to myself. The time that it took me for the entire building project was about sixty hours, including drilling holes, punching holes, filing, mounting parts and wiring.

The purpose, which is plain to see, is that the supply is to furnish various voltages. The voltages provided are as follows: 1.5, 2.5, 6.3 which are A.C. currents and 95, 350, and 600 which are D.C. currents. The low voltages furnish current for the filament of the tubes and the high voltages are the plate currents.

The total cost of my supply was about \$15 which does not include the parts that I already had on hand. I value my supply at about \$30. This is the probable cost to build it although I would not sell it at that price because it is designed for my own use and is, of course, more valuable to me. I plan to build, in the very near future, more circuits to operate from my power supply. Some of the circuits are for a proximity detector, phonograph, radios, amplifier, a transmitter, and other circuits which I have use for.

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### ALUMINUM AND MUD

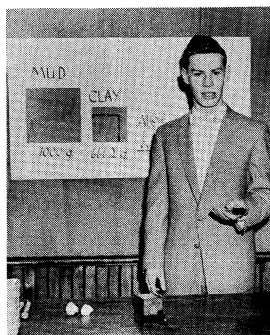
By Gary Kaziukewicz  
De Padua High School, Ashland

Is it possible to get from a clump of solid, inert mud, the silvery metal, aluminum? After three years of study and work, I have found out that it is possible, for on March 12, 1956 I obtained aluminum from mud that I had taken from under our house.

My preliminary work included the use of common acids, separately and in mixtures, the use of hydrofluoric acid, qualitative tests of the ordinary elements, electrolysis, and the use of fused sodium hydroxide in trying to break down and analyze the mud.

For a more systematic procedure and understanding of analysis, I obtained a Qualitative Analysis book and borrowed a centrifuge from the hospital laboratory at which I worked. I made tests on known substances. It was after this that I tried adding moist pieces of mud to fused sodium hydroxide. After adding water, I had the flocculent white aluminum hydroxide precipitate.

My final results were obtained as follows: I separated the 622.12 grams of clay from one kilogram of mud by the slaking process. The clay was ground and made to pass through a sixty mesh screen. This was roasted to remove any organic matter. Moist bits of clay were then added to fused sodium hydroxide. After obtaining aluminum hydroxide, I continued by means of the Bayer process to obtain aluminum oxide. In this step the mixture was put in a pressure cooker that registered 27 pounds pressure and 265 degrees Fahrenheit, for three hours. The hot liquid was filtered through a Buchner funnel. Because of the fineness of the mud, it passed through with the filtrate and therefore had to be refiltered using more filter papers. Quite a little of the sodium hydroxide crystals were lost in this step. Altogether I obtained 220 milligrams of aluminum hydroxide crystals. These were heated to get the 205 milligrams of aluminum oxide.



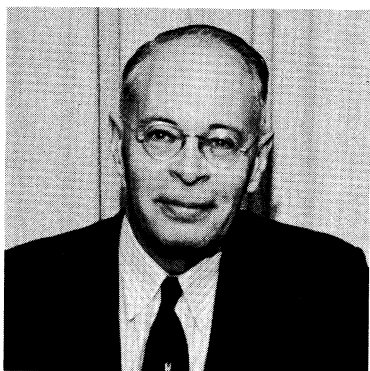
I continued by means of the Hall process to get pure aluminum. For this I used a series of welders at the Vocational School.



I built an electrolytic furnace, which was lined with carbon brushes discarded from generators at the local power plant. The carbon arc was formed and the cryolite was added. The heat was so intense that as soon as the aluminum oxide was added, about one-third of it spattered into the air. After keeping the current on for about five minutes, the furnace was removed. After the substance had cooled, I found the specks of aluminum in the hardened cryolite.

Although my greatest satisfaction in this project was the actual obtaining of aluminum, my three years of study and work have proven invaluable in that they have given me a greater general knowledge of Chemistry, a development of techniques in the fields of qualitative and quantitative analysis, and a greater appreciation of the work that has been and is being done in research.

# # #



H. DEAN COCHRAN—FORESTER

Retirement Profile

Academy member H. DEAN COCHRAN, regional forester of the North Central Region, will retire on October 31. Cochran, who has held his position since 1954, is in charge of the administration of the fourteen National Forests of the Lake and Central States. He is also responsible for the forest fire control, farm forestry advisory service, reforestation, and

numerous other region-wide programs of the Forest Service that are carried on cooperatively with the various state and private forestry organizations in the region.

Cochran was born in Keokuk, Iowa. After graduating from Illinois College in Jacksonville, and Colorado Agricultural College, he joined the Forest Service in Colorado in 1920. With numerous assignments in the Rocky Mountain area, he rose through the ranks to become assistant regional forester in Denver. Before coming to Milwaukee he was for a number of years Chief of the Forest Service's Division of Personnel Management at Washington, D.C.

Cochran is a senior member of the Society of American Foresters. He was awarded an honorary Doctor of Science degree by the Colorado Agricultural College in 1945, and in 1954 he received a superior service award from the Secretary of Agriculture. Upon retirement the Cochrans and their two boys will make their home in Port Republic, Maryland. --U.S. Forest Service News Bulletin.

# # #



## THE BOOKSHELF

### NORTHERN SPRING

An Anthology of Poems  
Edited by Ruth Morehouse

The Lund Press, Minneapolis, Minn.  
(Sales Agent: Arthur L. Fischer,  
268 Wisconsin ave., Oshkosh, Wis.)  
1956 \$2.00, postage 8¢

Seven years after its founding, The Wisconsin Fellowship of Poets presents its first anthology, NORTHERN SPRING, a volume both attractive and reassuringly substantial. A title page sketch and a frontispiece reproduced by permission from Wisconsin State Journal drawings by Frank S. Moulton offer most appropriate and tasteful illustrations.

The contents of NORTHERN SPRING vary in theme and style, as might be expected from the number, some seventy in all, of its contributors. The essence, however, is of Wisconsin--whether native preoccupations or the reflection of broad reading and travel. Wisconsin scenes, flora, and fauna figure here in these pages; and Wisconsin people, from the aboriginal to the immigrant and the migrant from other states: the tradesman, craftsman, student, husbandman, housewife, and (all the while) the thinker and the poet:

"Our homing hearts, from alien scenes,  
Wisconsin, speak to thee!"

An admirably inspired citation "In Memoriam" listing eight members recently lost through mortality is given a special page; it exemplifies the close-knit relationships within this fellowship.

Not all the poetry in this new and most welcome volume displays clarity and the mastery of techniques called for in art per se of superior rank; again, some is written in esoteric "progressive" mannerisms. Virtually all of the work, however, meets the test of dedicated aspiration. Accordingly such phrasings as

"The world that can be circled with an arm,"  
and "discrete sequences"

--such homely imagery as  
that of the rusty flash of foxes, as that of weather-silvered  
rails in a stake 'n rider fence

--these all qualify NORTHERN SPRING as nostalgic, prideful, quite unforgettably evocative. This anthology is worthy of Wisconsin, of a great American commonwealth--regional and cosmopolitan.

--Ralph Alan McCanse

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RECENT STUDIES IN AVIAN BIOLOGY

Edited by Albert Wolfson

 University of Illinois Press  
 Urbana, Illinois

 1955 \$7.50  
 (Sponsored by American  
 Ornithologists' Union)

(13 contributing authors. 7x10 1/2 in., 1-ix / 479 pp. No photographs.)

This book had its origin in the 1947 research committee of the American Ornithologists' Union. The objective of preparing a series of papers covering recent advances in ornithology were: (a) to review and evaluate recent data and concepts so as to define basic problems in the field; (b) to provide biologists in other fields with a partial compendium of current studies in ornithology.

It would be foolhardy for any one man to attempt to review critically the concentrated efforts of thirteen hand-picked scientists. In this regard, your reviewer is neither foolhardy nor an exception to the rule. The remarks that follow are the reactions of an AOU member to a report by selected individuals of the organization on a subject that already holds his interest.



There are thirteen chapters in all followed by an eleven-page index. Not all papers were received at the same time. The time range was from January 1952 to May 1955. How this affected the manuscripts is difficult to assess.

Chapter one (ALDEN H. MILLER) on "Concepts and Problems of Avian Systematics in Relation to Evolutionary Processes" leans heavily on the role of genetics and taxonomy as the combination that best illustrates avian evolutionary trends. The author speaks clearly and convincingly on the subject of "gene flow," "ecological islands vs. true geographic islands," and "roadblocks to gene transmission." The author is one of the few men who can view the panorama of evolution from a detached vantage point, whereas most of us must view the spectacle through the window of the present. In assessing the study of speciation, he ends his chapter with ten inherent advantages of ornithological material, and also five weaknesses and defects of such material. In one case the stability of color in birds is listed as an advantage and in another place it is considered a source of error due to oxidation of some melanins that cause "foxing." In each case the defects can be remedied. This is an excellent lead-off chapter.

"Recent Revisions in Classification and Their Biological Significance" (HERBERT FRIEDMANN) is the title of chapter two. There appear to be three general kinds of taxonomic revision: (1) the entire avian system; (2) at the level of families, or (3) at the generic level. In pursuing this breakdown of effort, the author holds no brief for either the lumpers or splitters. The consideration of birds, not only as "museum corpses" but as living entities that in life exhibit characters comparable to color and form, is one of the major points of the chapter.

"Paleontology" (Academy member ALEXANDER WETMORE) is the one-word title of chapter three. The prefix "avian" would have been more explicit. Lambrecht's *Handbuch der Palaeornithologie* (1933) and the author's paper (1952) brings up to date the list of fossil

birds, 787 forms in all. Recent finds of paleological material have clarified and extended our knowledge of fossil forms, but have failed to give us any completely new concepts relative to the avian group. The moas, petrels, flamingos, and the goose tribe, a terrestrial vulture, the California condor, ancient crane-like birds, a flightless auk and fossil perching birds are discussed in detail. Unfortunately three important references (Marsh p. 45, Hutton p. 48, and Milne-Edwards p. 49) are not cited in the text or bibliography.

"Avian Anatomy, 1925-1950, and Some Suggested Problems" are discussed in chapter four by HARVEY I. FISHER. He begins with a lament on the "trend of disfavor for things morphological" and points at the same time to the paucity of information on avian anatomy. A very fine review of the relationship of anatomy to taxonomy includes special treatment of embryology, muscles and the nervous system. The anatomical considerations of flight are dealt with in great detail. In this regard Prairie Wings by EDGAR QUEENY (1946) should have been consulted. The bibliography contains 253 references, 75 percent of which were written between 1931 and 1950; only two references before 1921 are cited, and only four after 1950.

Chapter five, "The Study of Behavior in Birds" (Academy member JOHN T. EMLÉN, Jr.) attempts to "re-examine the broad scope and significance of the study of bird behavior and to sketch some of the modern conceptual trends as they attempt to make order and meaning out of the accumulation of recorded observations." The Lorenzian and Maier, Schneirla, Lehrman et al. schools of thought are fairly well reconciled. One of the major ways in which animals adapt themselves to their environment is through behavioral responses. Genetic and physiological adaptations are of equal importance. This is a well-organized, well-written chapter ending with a provocative epilogue.

"Bird Navigation" (DONALD R. GRIFFIN) in chapter six deals largely with the "something more" than our readily explained physiological stimulation of the central nervous system which could account for a bird's special space perception. The author discusses mechanical sensitivity, terrestrial magnetism, infra-red vision, and normal vision. Homing is a matter of several kinds of searching, each of which is explained on the basis of mathematical probability. Homing is discussed in terms of three theories that are self-descriptive: (1) visual landmarks, (2) an inherited directional sense, and (3) sun orientation. This chapter ends with a very good summary.

In chapter seven, "The Annual Stimulus for Migration: Experimental and Physiologic Aspects," DONALD S. FARNER recognized two groups of environmental factors as causing bird migration: (1) proximate factors that twice annually induce the bird to migrate, and (2) ultimate factors that have survival value for the bird. The history of our knowledge of the annual stimulation of migration is divided into two periods: that from 1825 to 1925 was one of observation and inference; that from 1925 to the present has been a period of experimentation. The physiological approach has been foremost with special emphasis placed on the role of the anterior pituitary, the gonads, the thyroid and the metabolic complex. Each has produced its hypothesis but none gives a complete answer. Current studies are investigating the "zugunruhe" or restlessness of caged migrants. This chapter is an excellent compilation of both American and foreign literature.

GEORGE H. LOWERY, Jr. and ROBERT J. NEWMAN collaborated on "Direct Studies of Nocturnal Bird Migration" in chapter eight. The investigation of night migration has been of two kinds, the recording of flight-calls and the occurrence of birds passing across the face of the moon as observed through telescopes or binoculars. The auditory approach appears to be more difficult and hence subject to greater error. Although the telescopic data are not in accord with those gathered through auditory reception, the former demonstrate "irrefutably" (a) that night flights are of great magnitude, and (b) that movement across the moon diminishes in the predawn period when auditory activity is recorded as most intense. The peak of the night migration is at 11:30 p.m. The authors pay generous tribute to their cooperators.



"Breeding Biology of Birds" (DAVID E. DAVIS), covered in chapter nine, follows the annual breeding cycle of birds from pairing of the adults to fledging of the young. The methods described for all species are based on observational data obtained without the aid of elaborate apparatus. The method of handling the numerous published papers and the well-documented material makes the reading of this chapter relatively easy. In the epilogue the writer states, "Ornithologists are notably lax in recording detailed data in tabular form." The book in which this chapter appears seems to refute this contention.

"Recent Advances in Knowledge Concerning the Role of Hormones in the Sex Differentiation of Birds" (L. V. DOMM) are taken up in chapter ten. The role of hormones, in this case, is at present considered by the author to be controversial. Experimental data discussed concern hormone transplantation through living tissue, injection of chemically prepared hormones, and castration. In general, the evidence shows that at least one hormone intervenes in sex differentiation in birds. This chapter would have been aided considerably by a brief summary.

"Some American Population Research on Gallinaceous Birds" (Academy member JOSEPH J. HICKEY), reviewed in chapter eleven, includes data on 20 members of the families Phasianidae (19) and Meleagrididae (1). The failure of field men to manage game birds in the 1930's prompted a renaissance in the study of gallinaceous birds. This movement was kept in motion by financial aid from industry, institutions of learning, state game departments, and most of all by the Pittman-Robertson Act that made federal money earmarked for state research on game animals. The refining of techniques and methods was followed by attempts to analyze population structure and behavior from data obtained with the new methodology. Factors controlling population levels are grouped as density dependent and density independent, each set of factors being viewed in terms of the species affected and the time and place of the investigation. The material in this chapter is most familiar to your reviewer. If other chapters are equally comprehensive, we need not worry about the thoroughness and value of the publication.

Chapter twelve, "Birdbanding in the Study of Population Dynamics" (DONALD S. FARNER) deals very little with birdbanding per se. The recovery of banded birds is essential to the analysis of population dynamics. A population can be likened to a bucket of water being filled by one dipper and emptied by another. The first represents recruitment by birth and the other losses through

mortality. Mortality and survival rates can be calculated from recoveries of some banded birds. These rates may vary with age or sex and among the various species. There is some evidence that mortality rates may vary geographically. The chapter ends with a good summary and the list of references contains many titles from foreign literature.

The last chapter on the "Diseases of Birds" (CARLTON M. HERMAN) points out that there is no review in English of the diseases of wild birds. Ectoparasites, endoparasites, bacteria and fungi, and virus diseases are taken up in that order. With the dearth of comprehensive information on wild birds, the author is forced to rely on references to domestic fowl. The role of nutrition and a changing environment in relation to diseases of wild birds are considered important in control of such diseases. The chapter is well written. It is surprising, however, to note that the Leslie et al. (1911) monograph on Scottish red grouse and the Portal and Collinge (1932) book on [English] partridge diseases did not appear in the list of references cited. Although the former is hardly recent, it is nonetheless the most comprehensive of all known works on a wild species.

At the conclusion of chapter thirteen, a synthesis of these diverse efforts would have overcome the somewhat abrupt ending of this book. A brief comparison of advances made since the publication of "Fifty Years' Progress of American Ornithology" (1933) would have been interesting. Two more chapters, one on the "Ecological relationships among birds" and another on "Conservation and protection of rare species" might have filled two important gaps. S. CHARLES KENDEIGH and ROBERT P. ALLEN could have handled these assignments. I hasten to add that these would only contribute more layers to an already highly nutritious and palatable cake.

The AOU can well be proud of this publication and grateful to Editor ALBERT WOLFSON for a job well done. No serious student of ornithology, from Sunday bird watcher to professional, should be without this book.

--Robert A. McCabe

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#### A CENTURY OF WISCONSIN DEER

By Otis S. Bersing  
and

#### THE WHITE-TAILED DEER IN WISCONSIN

By Burton L. Dahlberg and  
Ralph C. Guettinger

Both published by:  
Game Management Division  
Wisconsin Conservation Department  
Madison 1, Wisconsin

1 - May 29, 1956 - 184 pages  
2 - July 19, 1956 - 282 pages

Management of deer in the wild has been a serious problem during the past several years in many of the states. Nearly all have had recent research activities. Few full reports have been published. In Wisconsin the deer problem has been a particularly troublesome one not alone because our state is inhabited each year by more deer than almost any other, but also because of multiple and varied selfish interests in the deer by different groups. Even though deer had become so numerous that they were literally "eating themselves out of house and home," the sportsmen clamored for more and more deer to shoot. City folk and other resorters lazying on their vacations wanted more and more deer to view at the doorstep of a hotel, cottage, or camp, but objected to any shooting. Agriculturists feared that the deer would severely damage crops, and wanted fewer and fewer deer. Likewise, dairymen wanted fewer deer browsing in the pastures. As citizens, we were faced with a major problem that involved many factors - biological, ecological, historical, economic, sociological, legal, diplomatic.



Results of major research, conducted under the Wisconsin Conservation Department and chiefly under the Deer Project initiated in 1940 by William S. Feeney, are included in these two publications. They thoroughly cover the deer management situation in Wisconsin. They supplement and complement each other with no useless overlapping. It is noteworthy that two such important works should be published within less than two months of each other.

"A Century of Wisconsin Deer" will be particularly of use and interest to the technician and wildlife manager. The preface (20 pages) gives a brief history of the deer situation and hunting in Wisconsin from 1634 to 1955. The main text is in two parts: (1) Gun Deer Hunting and (2) Bow and Arrow Hunting. Under these parts one finds many well arranged tables and maps showing hunting seasons, deer kill, range, and chronological notes. An appendix contains "The Wisconsin Deer Management Policy" and much other valuable information. An excellent list of literature relating to Wisconsin deer covers the eighteen concluding pages.

"The White-tailed Deer in Wisconsin" should be useful and interesting to most Wisconsin citizens. It is well illustrated and well written, issued in attractive book form. Ten pages of introductory matter lead to the nineteen chapters of main text. Under Part 1, "A Review of Wisconsin History Affecting the White-tailed Deer," are discussed the original environment, the logging and settlement era, and the development of conservation. Part 2, "The Deer Herd and Associated Subjects," is devoted chiefly to life history and habits. Part 3, "The Deer Range and Its Problems," covers general problems of environment, seasonal deer ranges, artificial feeding, and range carrying capacity. Part 4 dwells on hunters, kill, regulations, and other management problems. Four pages of literature cited immediately follow this text, but the references could better have been placed after the twelve appendices that conclude the volume. These appendices afford useful explanatory and often technical information that has a direct bearing on the problem and studies.

Some quotations from the latter publication are of interest: "The mistakes can be attributed to lack of specific information. There is no further excuse for continuing to make the same mistakes. \* \* this report has its main value as a reference for facts about why Wisconsin has had deer problems, and what has been and can be done about them." (p. 9-10). " \* \* there is continued need for research, especially on habitat manipulation." (p. 235). "However, we have high hopes that Wisconsin sportsmen will come to the support of deer management practices that will give them the largest possible return \* \*" (p. 238). The Wisconsin deer herd can well be maintained as one of the largest and healthiest in the nation.

---Hartley H. T. Jackson

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Editor's Note: The last of a series of chronological maps on the range of deer in Wisconsin is reproduced on the back cover of this issue. The relationship of deer populations to changing habitat conditions over the years is clearly shown in these maps.

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### THE BRULE RIVER OF WISCONSIN

By Leigh P. Jerrard

Hall and Son, Printers

Chicago, Illinois

1956

\$1.85

Order from Author, 522 Willow Rd.,  
Winnetka, Illinois

This 44-page booklet is a "labor of love" packed with historical data and featuring several detailed maps of the entire stream from its sources to its entrance into Lake Superior. An appendix lists a number of names which were applied to the Brule over the years. There is an extensive bibliography of reference sources.

The author, who is now also a member of the Wisconsin Academy, was born in St. Paul, Minnesota, and moved to Superior at an early age. Although he left Superior in 1904, he fished the Brule before 1900 when he was a schoolboy and has spent a part of each year on it since 1920 when his family built a cabin on the lower river.

Jerrard calls the Brule "a short river with a long history." He cites its special distinctions and points out that "Probably there is no other trout water which has been fished by five men who served as President of the United States." His aim in writing this booklet was "to set down all that is definitely known about the Brule River and its history, emphasizing the more obscure events. . . ." This he has accomplished in a readable and interesting manner.

---W. E. Scott

### SOIL SURVEY OF GRANT COUNTY, WISCONSIN

An Introductory Report

By Francis D. Hole

Soil Survey Division

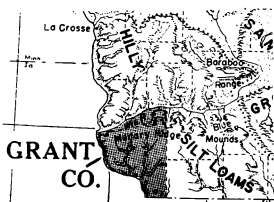
Wis. Geol. & Natural Hist. Survey

Bull. 80--Soil Series No. 55

204 Soils Bldg., UW, Madison 6

1956

35 cents



This recent bulletin of 54 pages contains in its back cover pocket a large scale colored soil map of Grant County dated 1952. The report is the result of cooperative work with the UW Soils Dept. and the U.S. Soil Conservation Service. Both the map and its accompanying booklet are based on the data of field surveyors who completed their work in 1950.

Grant County's 747,520 acres of land are given fairly detailed consideration in this "introductory" report. It contains four major parts: a generalized Key to the soils of the county; a soil productivity rating table in which the soils are listed in order of their estimated productivity of crops; a brief discussion on how the soils formed, illustrated by maps; and a set of soil profile descriptions.

Included in this report are sketch maps showing Grant County geology, mining areas for lead and zinc, surficial wind and water-laid deposits, stream pattern, topography and distribution of dark and light colored agricultural soils. A bibliography lists 18 references.

---W. E. Scott

### THE PRAIRIE AND ITS PEOPLE

By Andrew W. Hopkins and

Martha S. Engel

U.W. Agr. Experiment Station

College of Agriculture, Madison

May 1956

Bulletin 520

This booklet is the story of Wisconsin's "Empire Prairie" community - its origins, its history, and the life of its people,  
(continued on page 187)



**In Memoriam**  
**Burton R. Pierce**  
**1895-1956**

BURTON R. PIERCE, well known educator and member of the State Committee of the Junior Academy of Science, died at Stevens Point, Wisconsin, January 22, 1956. He was associated with Wisconsin State College at Stevens Point for more than 32 years. Born at Friendship, Wisconsin, November 28, 1895, he obtained his early education there. Graduated from Friendship High School, he attended Stevens Point Normal School until he entered the armed services in 1917.



After the war Mr. Pierce returned to complete his work at Stevens Point, graduating in 1921. During the next two years he taught mathematics and science at Augusta, Wisconsin. In 1923 he joined the faculty of the then Stevens Point Normal School. For many years he served as Principal of the Junior High School and supervised science and mathematics teaching in the College's Campus Laboratory School. He attended Ripon College during the summers and received the Ph.B. degree in 1926. Summer graduate sessions at the University of Chicago followed, and in 1938 he received the M.A. degree at the University of Iowa. His dissertation was "The Arithmetic of Algebra Students."

In professional work and in the improvement of teaching methods in arithmetic, Mr. Pierce was very active, serving on many State and area committees. He was a member of the N.E.A., W.E.A., C.W.E.A. and the Central Wisconsin Schoolmasters' Club, and affiliated with the Academy in 1954. In addition he was the first Scoutmaster in Stevens Point, and during his busy years, never lost his interest in that movement. He was a trustee of the Frame Memorial Presbyterian Church, and a member of Masonic bodies. He was chairman of the Goerke Bequest Corporation Loan Fund and in charge of all other student loan funds at the College. His work as Executive Secretary of the C.S.C. Alumni Association was especially effective, and through his capable management the work among the alumni groups has grown markedly.

All who knew Burton Pierce will remember his quiet, unassuming manner, his even temper, his love for people, and particularly for students, who in turn loved and respected him. Few faculty members have worked more faithfully in learning to understand and to help teenage youngsters in and out of school. Early to work, late to leave, Burton moved about unpretentiously, devoted to his work, sincere in his friendliness, devoted to his home, his church, and dedicated in service to the school he loved so well.

---Norman Knutzen

## In Memoriam

### Fidelia Van Antwerp

1881-1956

FIDELIA VAN ANTWERP, poet, author and teacher, died August 6, 1956 at Wisconsin Dells. Born at White Creek, Wisconsin in 1881, she was a graduate of Sparta High School and Beloit College. She taught school at Wauwatosa and then at Joliet, Illinois Junior High School and College for 32 years before retiring 10 years ago.



President of the Wisconsin Regional Writers Association since its organization in 1948, she was also active in the National League of American Pen Women, the Wisconsin Fellowship of Poets, and affiliated with the Academy in 1954. She had been an instructor in short story and creative writing classes at the UW Extension Division and assisted in organizing interested groups in many communities. Professor Ralph A. McCause of the Extension Division gives a brief epitaph: "Great spirit--now at rest, but vividly alive to many Wisconsin Regional writers."

From Miss Van Antwerp's own poem, "Painted by Ann" (Spring 1955 Review), which was addressed to her mother, come these lines:

"From dark death, you have attained perfection;  
Have known, first hand, the bliss of resurrection."

##

#### THE BOOKSHELF - continued from page 185

Its 37 pages are filled with historical anecdotes about the first explorers, the pioneer settlers, the original native prairie and its fires, the first highways, railroads, homes, churches, schools--and mostly about its people. All of this is nicely enhanced with 33 appropriate sketches by Byron Jorns. It is available free from the Bulletin Mailing Room. --W. E. Scott

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#### GROUND WATER IN WISCONSIN

By William J. Drescher

Wisconsin Geological Survey  
Information Circular No. 3  
State Geologist's Office  
Science Hall, Madison 6 25¢

State Geologist GEORGE F. HANSON announced in August the publication of this booklet "for anybody who wants to know about the water-producing formations in Wisconsin." The author is an Academy member employed by the U.S. Geological Survey and this report is one result of a continuing study of the state's ground water carried on jointly by the state and federal governments. The purpose of the report, as cited in its introduction, is "to describe in general the occurrence, source, movement, and use of ground water in Wisconsin in order that present problems of ground-water development may be understood and to point out the need for study and evaluation of the potential water available." Specific ground water problems for the following areas are discussed: Milwaukee-Waukesha district, Green Bay, Fond du Lac, Marshfield, Neillsville, the Antigo flats and Portage County. -- U.W. News

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## State and Academy News

### ACADEMY TRANSACTIONS

JAMES A. LARSEN, Editor of the TRANSACTIONS, has reported that Vol. 45 manuscripts went to the printer on September 27. It is expected that distribution will be made before the end of this year. Authors in this 1956 issue include HASKELL M. BLOCK, WILLIAM BUNGE, IRVEN O. BUSS, DONALD A. DEVER, S. TENISON DILLON, ROBERT F. GLECKNER, HAROLD A. GODER, H. C. GREENE, JOSEPH J. HICKEY, CLIFTON B. KROEBER, JAMES T. McFADDEN, JOHN C. NEESS, A. W. SCHORGER, KATHRYN and PHILIP WHITFORD, and H. F. WILLIAMS.

CAROL J. BUTTS, Librarian in charge of exchanges, advises that 1,242 copies of the Vol. 44 TRANSACTIONS were distributed as follows: Members, 660, orders, 14; U.S. exchanges, 146 and foreign exchanges 422. New foreign exchanges formed during the year include:

Belgian Congo. Institut pour la recherche scientifique en Afrique  
Berlin. Humboldt-Universität  
Erlanger. Universitätsbibliothek  
Freiburg. Universität  
India. Geological survey  
Pfalzischer Verein für Naturkunde und Naturschutz  
Scottish Marine Biological Association  
Szeged (Hungary) University  
Tokyo. Keio Gijyuku University

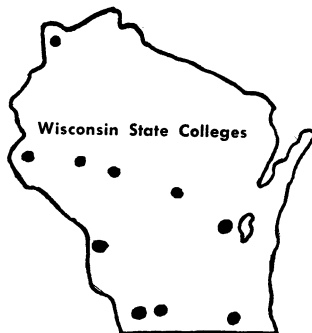
### REPORT ON THE WISCONSIN STATE COLLEGES

Two State College presidents, JIM DAN HILL of Superior and FORREST R. POLK of Oshkosh, are completing their 25th year as head of their institutions.

... Re-elected officers of the State College Board of Regents for next year are WILLIAM D. MCINTYRE, president;

LEWIS C. MAGNUSEN, vice-president, and Academy member EUGENE R. MCPHEE, secretary.

... With 47 new teaching positions authorized for the ten State Colleges, total faculty membership is approximately 700. ... The total of State College budgets slightly exceeds nine million dollars for training about 11,000 on-campus, 2,400 off-campus and 6,000 summer students. ... In June the State College Regents approved a priority list for 15 buildings "urgently needed" at an estimated cost of over 15 million dollars.



### NEWS NOTES FROM MARQUETTE UNIVERSITY

Collected by Prof. Scott L. Kittsley (Review Reporter)

The Very Rev. EDWARD J. O'DONNELL, S.J., president of Marquette University, was awarded an honorary Doctor of Laws degree at the June convocation of the University of Wisconsin. Almost at the same time, a similar honorary degree was awarded by Marquette University to KONRAD ADENAUER, Chancellor of West Germany. The Chancellor announced that he would give Marquette two scholarships for study in Germany. ... The Chem-

istry department is now operating under a committee which includes two Academy members, SCOTT L. KITTSLY and JOHN G. SURAK, with the former acting as chairman. ... A Science Teachers' Institute was recently conducted by the science department under the leadership of L. W. FRIEDRICH, S.J. ... Four Academy members recently receiving promotions are HERMAN L. KARL, SCOTT L. KITTSLY and JOHN G. SURAK to Associate professors and STANLEY PELOQUIN to Assistant professor.

#### NEWS NOTES FROM CARROLL COLLEGE

Collected by Prof. Roy J. Christoph (Review Reporter)

The Waukesha Symphony Orchestra opens its tenth annual concert season October 23 under the direction of MILTON WEBER. Four subscription concerts follow on December 11, February 14, March 19, and April 30. The Opera Guild of the Waukesha Symphony will present two one-act operas, Kurt Weill's "Down in the Valley" and Menotti's "The Old Maid and the Thief." MILTON WEBER has been named a board member on the Children's Art Program in Milwaukee, sponsored by the Milwaukee Art Institute and the Junior League of Milwaukee. ... The Department of Biology, in cooperation with the Wisconsin Department of Agriculture and the Waukesha Park-Recreation Department, has set up a testing laboratory for the diagnosis of the Dutch elm disease within the city of Waukesha.

#### NEWS NOTES FROM U.W.-MILWAUKEE

Collected by Prof. Peter J. Salamun (Review Reporter)

The Botany Department of the newly formed University of Wisconsin-Milwaukee consists of RUTH WALKER, chairman, PHILIP WHITFORD and DOUGLAS DUNLAP, all formerly of the Extension Division in Milwaukee, and ALVIN THRONE, PETER SALAMUN and FRED KAUFMANN of the former Wisconsin State College, Milwaukee. Two new staff members who will assume duties this fall are JOHN BAXTER, formerly at the Iowa State College and ROBERT COSTELLO, who was on the staff at the University of Michigan. ... During the past summer PHILIP WHITFORD was employed by the Milwaukee County Park Commission and RUTH WALKER attended the A.I.B.S. meetings at Storrs, Connecticut.

#### MISCELLANEOUS NEWS

Four Academy members won prizes in the recent contest of the Wisconsin Regional Writers Association. MARIAN PIER PAUST of Richland Center was first in the poetry classification and ANNE C. ROSE of Gilmanston was second. HELEN C. SMITH of Evansville was first in the short story contest and received honorable mention for an essay. Also, in the essay group, ALVIN M. PETERSON of Onalaska rated second. ... ROBERT W. NERO is now Assistant Director of the Saskatchewan Museum of Natural History at Regina. ... Attention is called to an excellent article on "Wisconsin's Science Writing Program" by JAMES A. LARSEN in Science for April 27, 1956. ... The University of Wisconsin has announced that a building program for the Madison and Milwaukee campuses estimated at \$105 million will be necessary to meet the demand for higher education. ... Almost \$20 million of this would be expended for buildings in Milwaukee. ... During their last fiscal year, the Wisconsin Foundation of Independent Colleges received contributions totaling \$171,446 from 97 corporations, business firms and individuals. ... A new directory of UW College of Engineering graduates lists over 10,000 scattered throughout the world and more than 3,500 in Wisconsin. ... The U.W. ranked first in the 1954-55 period in the number of doctorates (Ph.D.) granted (399) according to the Assn. of Research Libraries.

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End of Volume 3

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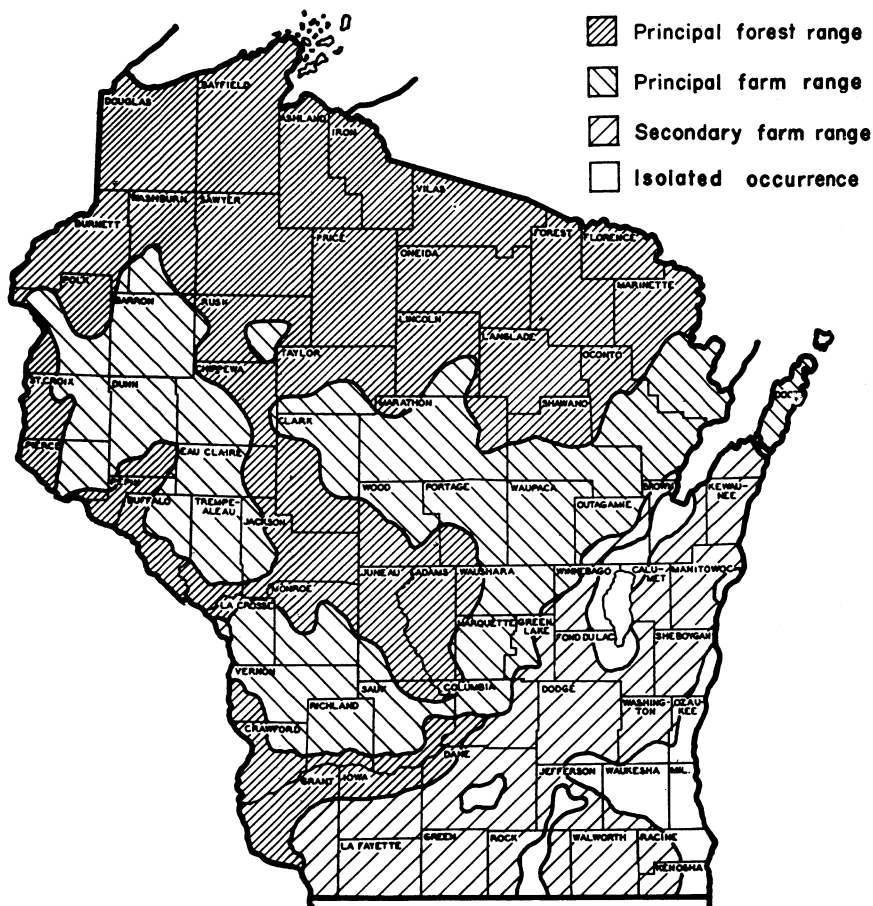
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#### EDITOR, WISCONSIN ACADEMY REVIEW

Walter E. Scott, Madison



## THE WHITE-TAILED DEER IN WISCONSIN



Wisconsin deer range in 1954.

This map is Figure 6 in the Wisconsin Conservation Department's recent book, "The White-tailed Deer in Wisconsin," by Burton L. Dahlberg and Ralph C. Guettinger. It is reviewed in this issue by H. H. T. Jackson.