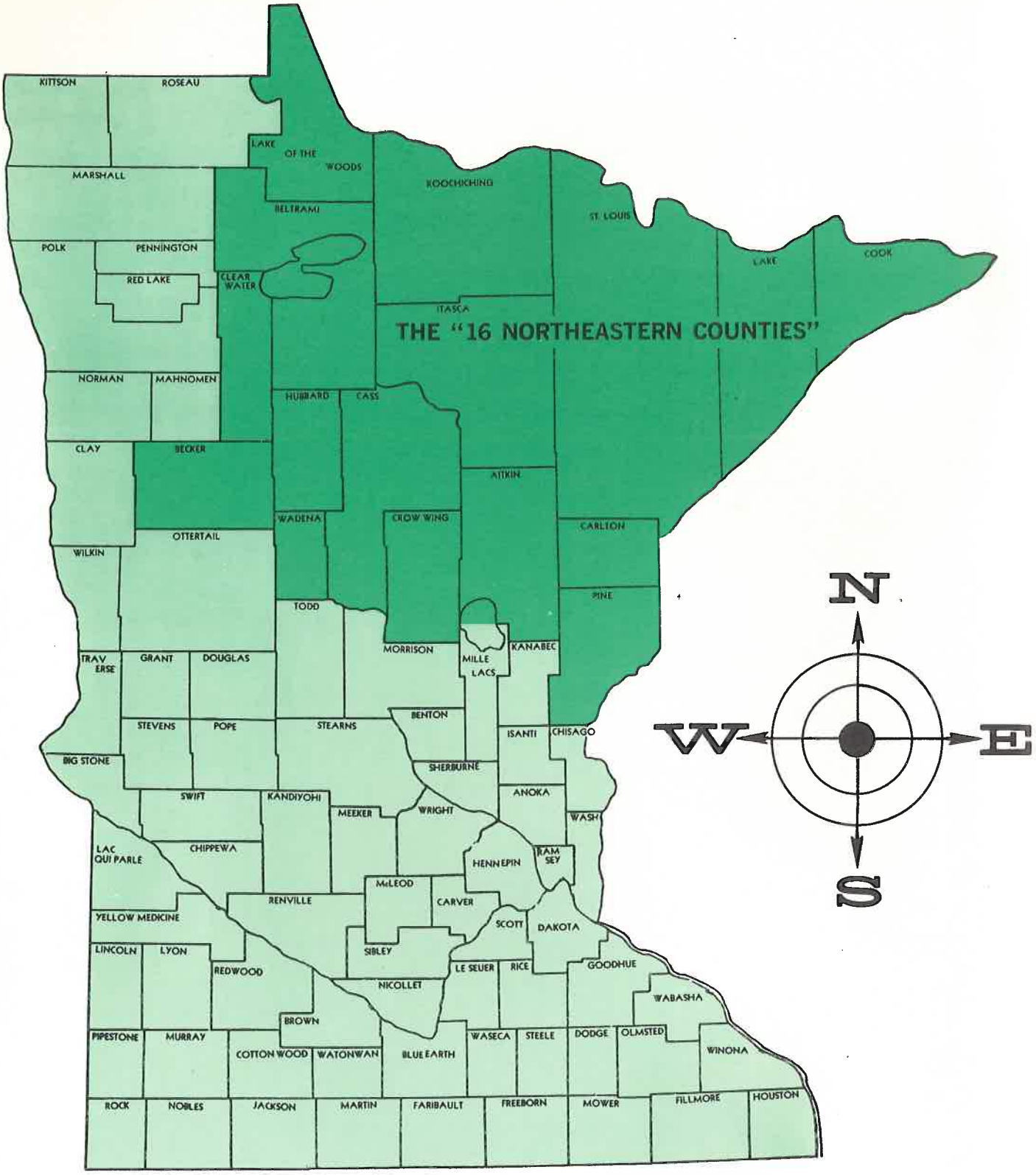
NATURAL RESOURCES OF MINNESOTA: 1962

HOW RECREATION, GAME AND FISH, LAND, WATER, FORESTS AND MINERALS CAN BETTER SERVE THE PEOPLE OF OUR STATE

A plan for action by the Minnesota Natural Resources Council



THE COUNTIES OF MINNESOTA

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Cover: The Common Loon, State Bird of Minnesota

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A LETTER TO THE GOVERNOR

October 1, 1962

The Honorable Elmer L. Andersen
Governor of the State of Minnesota
Saint Paul, Minnesota

Dear Governor Andersen:

Herewith is the report of the Minnesota Natural Resources Council, which you appointed last fall.

This document represents the best thinking of nearly 50 experts, who in turn have consulted many other authorities.

The work itself (which consumed about 4,000 man hours) was divided into the six main classifications of our natural resources, each with its own task force. The chairmen and members of these task forces are listed at the beginning of their respective reports. All problems and proposals have also been summarized for your convenience.

A highlight of the year's activity was the one-day symposium we held at the University on February 7th. In addition to Council members, quite a few guest speakers, including yourself, participated.

Under the heading "Major Findings" you will find one basic recommendation which we believe ties in with your efforts to develop an overall, long-range plan for the entire State. The present Council stands ready to help you achieve this great goal.

Respectfully submitted,

Henry T. McKnight

Henry T. McKnight, Chairman
Minnesota Natural Resources Council

MINNESOTA NATURAL RESOURCES COUNCIL

PURPOSES

The Council was appointed in October, 1961, by Governor Elmer L. Andersen for the following purposes:

▶ To identify current problems, and to stimulate and co-ordinate studies and action aimed at their solution. Its guidance in this field is intended to assure adequate coverage of important problems, and to avoid undesirable overlapping and duplication.

▶ To advise the Legislature, the Governor and the various agencies and interests represented in its membership with respect to natural resource policies, administration and management.

▶ To facilitate contacts, and to promote co-operation among the various agencies and interests concerned with natural resource problems. Full knowledge of each other's views and plans is a prerequisite of their working together for a common end: promotion of the public interest.

Costs of the study were underwritten by the Louis W. and Maud Hill Family Foundation.

MEMBERSHIP

Chairman

Henry T. McKnight, Vice President, S. T. McKnight Co.

Executive Secretary

Parker O. Anderson, University Extension Forester (retired).

Members

Robert W. Burwell, Director, Regional Office, Bureau of Sport Fisheries and Wildlife.

Edwin P. Chapman, Judge, Municipal Court, Minneapolis.

John C. Cornelius, Senior Consultant, Batten, Barton, Durstine & Osborn, Inc.

Frank P. Crippen, Farmer, Sanborn.

Armando M. DeYoannes, Commissioner, Iron Range Resources and Rehabilitation Commission.

William F. Dietrich, Director, Green Giant Co.

Albert Gillie, Commissioner, Lake of the Woods County.

Hugh H. Harrison, Chairman, Pittsburgh Pacific Co.

Mrs. Kermit V. Haugan, President, Mississippi Valley Conference of State Federations.

Wesley Libbey, Past President, Minnesota Division, Izaak Walton League of America.

C. David Loeks, Director, Twin Cities Metropolitan Planning Commission.

Adolph F. Meyer, Hydraulic Engineer, St. Paul (died July 29, 1962).

Lawrence P. Neff, Supervisor, Superior National Forest.

Orville C. Peterson, Executive Secretary, League of Municipalities.

Clarence Prout, Commissioner, Department of Conservation.

Glenn Ross, President, Suburban Lumber Co.

Nobel Shadduck, Attorney, Annandale.

Norman Slade, Farmer, White Bear Lake.

Thomas H. Swain, Commissioner, Department of Business Development.

R. J. Whaling, Auditor, Itasca County.

Duane A. Wilson, Commissioner, Department of Agriculture.

O. Meredith Wilson, President, University of Minnesota.

Raymond J. Wood, Director, Forest Management and Timber Procurement, Diamond National Corp.

Ex-officio

Representative Harry Basford, Chairman, House Game and Fish Committee.

Representative Sam Franz, Chairman, House Drainage and Soil Conservation Committee.

Senator Clifford Lofvegren, Chairman, Senate Game and Fish Committee.

Senator C. C. Mitchell, Chairman, Senate Public Domain Committee.

Senator Donald Sinclair, Chairman, Senate Agricultural Committee.

Representative Arne C. Wanvick, Chairman, House Forestry and Public Domain Committee.

Consultants

John H. Allison, Professor Emeritus, School of Forestry, University of Minnesota.

Douglas W. Barr, Consulting Hydraulic Engineer, Minneapolis.

John R. Borchert, Professor and Chairman, Department of Geography, University of Minnesota.

Frank Bourgin, Citizens' Program for Taconite Expansion, Virginia.

Edward W. Davis, Professor and Director Emeritus, Mines Experiment Station, University of Minnesota.

Donald P. Duncan, Professor, School of Forestry, University of Minnesota.

Clifton E. French, Superintendent, Hennepin County Park Reserve District.

John Hammes, Mineral Economist, School of Mines, University of Minnesota.

O. B. Jesness, Professor Emeritus, Agricultural Economics, University of Minnesota.

Frank H. Kaufert, Professor and Director, School of Forestry, University of Minnesota.

Fred E. King, Public Relations Representative, Farmers & Mechanics Savings Bank of Minneapolis.

Frank W. Peck, Farm Credit Consultant, St. Paul.

Eugene P. Pfleider, Professor and Head, School of Mines and Metallurgy, University of Minnesota.

George M. Schwartz, Professor and Director Emeritus, Minnesota Geological Survey, University of Minnesota.

Donald W. Scott, Metallurgical Engineer, Continental Sales and Service Co.

Symposium Guest Speakers

Joseph S. Abdnor, Associate Counsel, Pickands Mather & Co.

Elmer L. Andersen, Governor, State of Minnesota.

Walter Breckenridge, Director, Museum of Natural History, University of Minnesota.

Sidney Frellsen, Director, Division of Waters.

Thomas L. Joseph, Professor, School of Mines, University of Minnesota.

William P. Martin, Chief, Department of Soils, University of Minnesota.

Warren S. Moore, President, Warren S. Moore Iron Ore Co.

Editor

Philip F. Kobbe, Wayzata.

NATURAL RESOURCES OF MINNESOTA: 1962

REPORT OF THE MINNESOTA NATURAL RESOURCES COUNCIL – OCTOBER, 1962

MAJOR FINDINGS

PLUS SIGNS

What We Have

Minnesota is wealthy.

It is wealthy because it happens to possess the key to all wealth – an abundance of natural resources.

More than most states, Minnesota is wealthy in its soils and waters and minerals, in its forests and wildlife. And as a sort of extra dividend, these riches yield still another resource – that favorite Minnesota pastime: outdoor recreation.

How well do the people of Minnesota appreciate their wealth? The statistics are far from dry . . .

+ Outdoor recreation and tourism are Big Business in Minnesota, ringing up annual "sales" of at least $350 million.

+ Wildlife? Minnesota supplies 500,000 hunters with some of the Nation's finest deer, duck and upland game hunting, and enough trout, northerns, walleyes, bass and panfish to keep 1½ million fishermen coming back for more.

+ The forests of Minnesota yield a cash crop of $250 million a year, which, surprisingly, is just about the same price tag they carried when lumbering was in its heyday at the turn of the Century.

+ Those famous sky-blue waters of Minnesota actually cover as much ground as the entire land area of Connecticut – and there are oceans more under the ground.

+ Minnesota's amazing soils (over 400 kinds) grow foods, feeds and fibres that add up to $1½ billion at the agricultural check-out counter.

+ Finally, no matter what you may have heard, Minnesota is still the biggest mineral-producing area in all the world, harbors a half billion-dollar enterprise that directly supports some 20,000 families.

MINUS SIGNS

What We Should Have

Unhappily, the other side of the coin is not so bright. For there is a limit even to the great wealth of Minnesota's natural resources.

Perhaps we have been drawing too lavishly upon our capital. Perhaps we have been careless in the management of our assets. Perhaps we have miscalculated the growing demands from within the State, the terrific competitive forces from outside the State.

Suddenly we wake up to find some of our precious resources diminishing in value, some languishing for want of development, some practically exhausted. The signs are all too clear . . .

– **Recreation.** Of all Minnesota's lakes, only about 2,400 are accessible to the public by foot, less than a thousand by car. We have plenty of land and water that is ideal for outdoor recreation, but because of the ever-growing wants of more people with more leisure and more automobiles, not nearly enough of this space is readily available for parks and parkways, boating and camping – or even just parking along the roadside. Goals: a State plan, development of 130,000 more acres of recreational lands.

– **Game and Fish.** If Minnesota's game-producing wetlands continue to be drained at the present rate, they will all but disappear in a few decades. Add to this the failure to develop potential wildlife habitat, and it could mean the end of hunting in Minnesota as we know it today. Even the fish supply is falling behind. Goals: more wetlands, better management of habitat, more funds more efficiently used, enough game and fish for 750,000 hunters, 2½ million fishermen.

– **Land.** No other state has lost so much productive use of its land through tax-forfeiture as Minnesota. This land (about four million acres held by various counties) cannot be readily converted to more productive use because of our complicated title laws. Yet it is desperately needed for the development of just about all our natural resources, including recreation. As for the soil itself, we are shamefully ignorant of what we own. Only 17 of the State's 87 counties have had their soils completely classified. Goals: release of tax-forfeited lands for more productive use, rapid completion of soil surveys.

Governor Andersen: a 50-year dream

– **Water.** Every sizeable stream in Minnesota, except those along the North Shore of Lake Superior, is probably polluted. In the Twin Cities area, where a third of our people live, pollution is especially serious. On top of this, our water supply is leaking away through excessive run-off and weak controls. This condition affects all natural resources, and discourages industry from moving to Minnesota. Goals: a unified approach to the pollution problem, especially in the Twin Cities area, better conservation of surface and underground supplies.

– **Forests.** Growth of Minnesota's forest products industry is stunted by limited availability of lands for commercial use, the slow rate of reforestation with marketable conifers and an over-production of low-grade hardwoods. Goals: faster reforestation, encouragement of industry, development of new uses and markets, $100 million more a year from forest products.

– **Minerals.** Minnesota's high-grade iron ore will be exhausted in about ten years. Expanded production of taconite to take its place is thwarted by the high costs of competing against newly discovered sources of rich ores in other

THE STATE'S CASE

By JUDGE EDWIN P. CHAPMAN

Its natives and first citizens, the Indians, gave Minnesota its name, a free translation being "the land of sky blue waters." Early explorers and missionaries left their mark on its history and its place names: Verendrye, Marquette, LaSalle, Hennepin, DuLuth. It was a part of the great fur trade. The romance of these ancient days is intrinsically interwoven into Grand Portage, Fort Snelling, Pipestone.

From the beginning of Statehood Minnesota reached pre-eminence as a wheat producer, giving rise to its world-famous milling industry. In succession came the dairy industry; the mammoth logging operations, in turn creating the lumber and saw milling industries; then the fabulous iron ore discoveries and mining, eventually producing steel for a large part of the world. And in each of these great developments the abundant natural resources of the State were used and decreased. The myth of inexhaustible resources was exploded.

The Golden Age for Minnesota, however, is not ended. Its renewable resources are being re-stocked, substitutes are being found for the others, and man's genius is finding use for those heretofore considered worthless. Milling, the lumber and pulp industries, taconite mining, agriculture, and a new concept of the use of natural resources for the recreation of the people indicate a continued great future for Minnesota.

Minnesota is endowed with perhaps more of the resources essential for outdoor recreation than any other state of all fifty. It has more water, lakes and rivers within its boundaries. It is bounded on the north by the great international chain of border lakes and rivers constituting the canoe wilderness area from Lake of the Woods to Lake Superior that make up a part of the famed Quetico-Superior wilderness area. On the east it is bordered by the great saltless sea, Lake Superior, the St. Croix and the Mississippi Rivers; and on the west, in part, by the Red River of the North and lake waters.

It has approximately 4,000 square miles of water area. The importance of this water to all of the activities within the State, including recreation, the resort business and industry, needs to be considered anew to protect the public's right to the uses of water and to control contamination, pollution and run-off.

Minnesota's land is a constant and unchanging asset — approximately 80,000 square miles, or 51 million acres. Approximately one-fourth, or 13½ million acres, is publicly owned. This land is divided about evenly between the Federal, the State and the county governments. This great area in public ownership is at once a blessing and a problem. The difficulty presented is its geographical location in the northern and northeasterly sparsely settled part of the State, whereas the larger proportion of the people reside in the central and southerly parts, particularly in the Twin Cities metropolitan area. The remaining 37½ million acres within the State are practically all privately owned land — some 33 million acres by farmers, and 4½ million acres by all other users.

Minnesota has an additional asset in its sturdy people. In numbers the 1960 census states a population of 3,414,000. By April 1, 1962, the population had increased by some 84,000. By 1970 its numbers may increase to 3¾ million, and by the 1980's to over 4 million. The youngest and oldest age groups predominate, and outnumber the productive age groups.

The trend of Minnesota's population has been from virtually 100% rural, during its territorial days slightly over 100 years ago, to about 63% urban and 37% rural in 1960. Reasonable estimates indicate that by 1970 the population will be 70% urban and 30% rural; and by the 1980's 80% urban and 20% rural. This trend gives no indication of reversing itself.

With growing populations a world-wide, not merely a local, phenomenon, it may be expected that there will be more people with less space for each of them, creating greater demands for many competing or conflicting uses.

Simply stated, action must be taken now to assure Minnesota's going forward to meet the challenges of time and change, and thus to continue its Golden Age.

areas. The competitive situation is accentuated by Minnesota's harsh rules regarding taxes and mineral reservations, as well as by a generally unfavorable or uninformed public attitude toward the industry here. So far, little has been done to develop Minnesota's significant deposits of other minerals, including the Nation's biggest supply of peat. Goals: more sympathetic climate for the iron mining industry, development of other Minnesota minerals, 10,000 more jobs.

BASIC RECOMMENDATION

Advisory Council

Speaking to the Council at one of its many meetings during the past year, Governor Andersen said: "We have a tremendous opportunity to accomplish what has been dreamed of for 50 years or more."

The following pages are packed with 180 specific, documented proposals to help make this dream come true. While some of these proposals may seem to be concerned with only a small phase of our natural resources, most of them are closely related to each other and to other basic problems in such areas as transportation, education and economic development, all of which affect the future of Minnesota in a vital way.

There is a need to look at the subject of natural resources within the framework of a comprehensive program for the development of all resources — both natural and man-made.

This suggests a fundamental recommendation. It is this:

▶ **The Legislature should provide for the creation of an Advisory Resources Council, consisting of broad representative interests, to make policy recommendations to the State and its agencies on the subject of the development, use and management of Minnesota's resources.**

Minnesota is presently engaged in the initial phases of a comprehensive State planning program. An Advisory Resources Council would provide an important function in the development of a State plan by reflecting the viewpoints of other major interests affected by the plan.

As suggested by the recent "Dana Study,"* such a council "would require only a small staff — perhaps a director, two or three technical assistants, and about the same number of clerks and stenographers. . . . Total costs would be small, and there would be no interference with or duplication of the functions of existing State or other agencies."

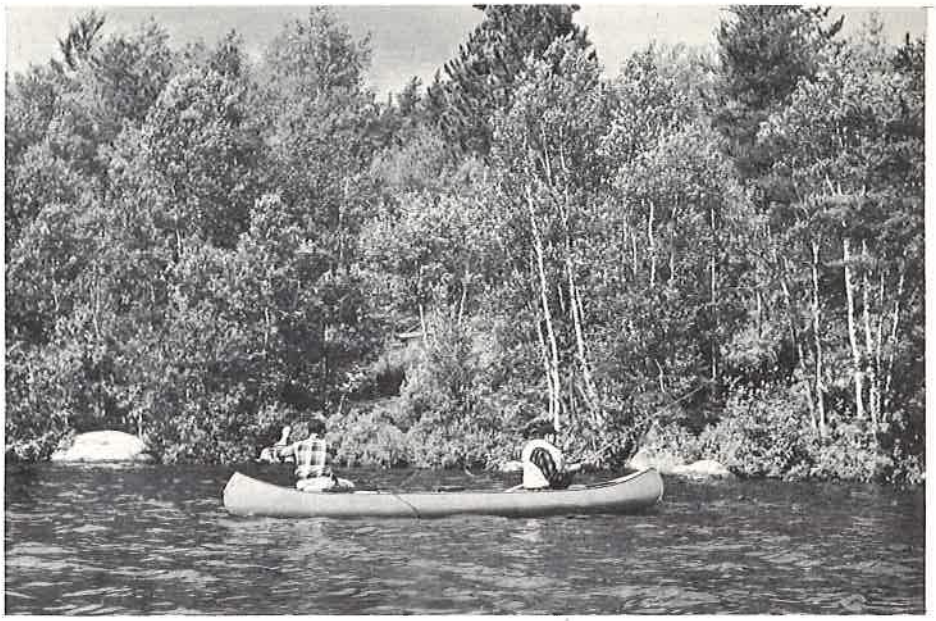
*MINNESOTA LANDS. Samuel Trask Dana, John H. Allison, Russell N. Cunningham. The American Forestry Association. 1960.

RECREATION

A NATURAL GATEWAY

More people with more leisure, better transportation and higher income will continue to demand more of Minnesota's land and water for recreational purposes. These people include not only residents, but also the thousands of annual visitors who help maintain a tourist industry that now contributes $350 million a year to the State's economy. Minnesota is the natural gateway to the wilderness lake country for a third to a fourth of the Nation's population.

▶ **Minnesota should develop its outdoor recreational resources to an appreciably greater degree than has been done thus far.**



Canoe country: more people with more leisure

RESEARCH AND PLANNING

Outdoor recreation in Minnesota competes with many other activities for the use of the basic resources: land and water. Agriculture, forestry, mineral production, highway construction and urban expansion also need these same basic resources. Yet there is no single unit in the State Government that has the authority to co-ordinate all these demands. Knowledge on which to base priorities among competing uses is not available. This is particularly true in the field of outdoor recreation. Probably no other activity affecting the lives of so many people has had so little attention from qualified scientists.

▶ **The State should establish a long-range plan, based upon research, to achieve the optimum development of the natural resources upon which Minnesotans depend.**

Research. A continuing research program should be conducted during the next seven years to evaluate three aspects of Minnesota's recreational resources: a) human benefits; b) management policies; c) supply and demand. Total cost: $1 million.

State-wide Plan. An independent committee should be established to formulate a State-wide, long-range plan for the development of outdoor recreational opportunities in Minnesota. Using matching Federal funds, the cost to the State will be $500,000.

Administration. The Legislature should consider establishing within the State Government a division concerned with matters relating to outdoor recreation.

RECREATIONAL LANDS

Since Minnesota has a relatively high proportion of its land in public ownership, the primary problem insofar as public recreational use is concerned, is one of distribution. In northeastern counties, 63% of the land is in public ownership whereas in southern counties, only 2% is publicly owned. Open lands in the Twin Cities metropolitan area are fast disappearing. Waterfront areas for public use are decreasing rapidly.

▶ **Lands needed for recreational use should be acquired as soon as possible in order to assure minimal costs.**

State Parks. An additional 50,000 acres of land should be acquired by 1970 for State parks and canoe campsites at an estimated cost of $3,750,000.

Hardwood Forest. 50,000 acres should be acquired by 1970 for the proposed Minnesota Memorial Hardwood State Forest at an estimated cost of $1 million.

Parkways and Waysides. Major parkways along the Great River Road and the North Shore of Lake Superior should be developed rapidly. The Highway Department should establish 57 additional wayside areas by 1970.

County Lands. The State should provide matching funds to counties, especially the 16 most heavily populated ones, for the purpose of establishing recreational land systems totalling 25,000 acres by 1970. The total cost to the State would approximate $5 million.

Municipal Lands. The State should provide matching funds to the 18 municipalities with populations exceeding 20,000, for the purpose of acquiring 3,500 additional acres of recreational land by 1970. The estimated cost to the State is $1,750,000.

Private Lands. State studies should explore methods such as tax concessions, easements and leases for preserving the scenic values of, or for providing public access to, private lands for recreational purposes.

Resorts. The resort industry of Minnesota should be assisted in its effort to attract tourists.

WATER ACCESS

Although Minnesota has greater recreational water resources than any other state, less than 1,000 of its lake shore sites are now publicly accessible by motor vehicle. At the present rate of acquisition, it would take 40 years to attain the minimum needed number of such sites. The access problem is particularly critical in the Twin Cities area.

SUMMARY

▶ **The State should take steps to increase the rate of acquiring water access sites, especially in the Twin Cities metropolitan area.**

State Acquisition. The State should increase the rate of acquisition to 600 water access sites annually in order to attain a total of 5,000 access sites by 1970. The estimated cost to the State for this program is $7 million.

Local Assistance. Municipal, township and county governments should assist in making suitable lands already in their ownership available without charge, and in undertaking maintenance, particularly where local use is heavy.

FINANCING

Lack of adequate funds for outdoor recreation is a serious problem: until recently such funds have usually been the last to be appropriated, the first to be reduced. Because of rising land costs (about 10% a year) postponement is expensive.

▶ **The State should take immediate steps to finance more adequately the recreational needs of Minnesota.**

Bond Issue. To finance the major proposals of this program, general obligation bonds should be issued in the amount of $20 million, to be allocated during the next seven years as follows:

Research	$ 1,000,000
State-wide Plan	500,000
State Park Lands	3,750,000
Hardwood State Forest	1,000,000
County Lands	5,000,000
Municipal Lands	1,750,000
Water Access	7,000,000
TOTAL	$20,000,000

Other Revenues. To help meet the cost of operating Minnesota's recreational facilities, these steps should be taken:

	Annual increase
Boat Registration Fees should be raised from $1.50 to $3.00 per boat per biennium	$175,000
Campers' Fees for primitive State forest campgrounds should be set at $1.00 per night; for modern State park campgrounds at $1.50 per night	35,000
Gasoline Taxes for marine use should all be applied to recreational resource development	60,000
Driver's License Surtax of $1.00 should be imposed	475,000
TOTAL	$745,000

GAME & FISH

A PLACE TO HUNT AND FISH

Because of increasing population and greater mobility, there is a declining trend in Minnesota's available wildlife habitat. This trend threatens the continuation of successful hunting and fishing as a form of outdoor recreation. The problem is accentuated by lack of suitable publicly owned lands, neglect of private lands, drainage of wetlands, insufficient public access to lakes, streams and shooting areas, the declining reproduction rate of certain species and conflicting conservation programs.

▶ **The State should substantially increase its efforts to offset the decline of wildlife habitat in Minnesota, and should initiate plans to insure the perpetuation of hunting and fishing for future generations.**

Habitat. To provide places to hunt and fish, the State should maintain land and waters that now produce game and fish, through a) acquisition of public lands; and b) assistance to private landowners.

Co-ordination. The various State and Federal programs that directly affect the wildlife resources of Minnesota should be co-ordinated in the public interest.

WETLANDS

Wetlands of western Minnesota will be largely gone in 30 years if they continue to be drained at the present rate of 2% to 5% a year. With them will go the Nation's best duck-producing habitat, spawning grounds for fish, cover for upland game birds, big game and fur animals. Their loss would also tend to increase land erosion, stream siltation and flooding, to reduce underground water supplies and to eliminate many sites for outdoor recreation. Drainage of wetlands in Minnesota has been encouraged by Federal subsidies and the Small Watershed Projects of the Department of Agriculture.

▶ **Because Minnesota's wetlands are of value to the entire State, a program to preserve them should be shared and financed by all citizens, not just sportsmen as is now the case.**

Minnesota fisherman: 1½ million come back for more

Federal Drainage Subsidies. The Governor and the Legislature should request Congress to prohibit Federal assistance for the drainage of wetlands that are of primary value to wildlife.

Acquisition. The Legislature should appropriate $300,000 of additional funds per year so that the State's wetland acquisition program can attain the goal of 250,000 acres by 1969.

Drainage Assessments. The Legislature should repeal that section of the Fish and Game Laws which provides for drainage assessments against State-owned wetlands (Section 97.484).

Drainage Control. The Legislature should amend the Game and Fish Laws to restrict the drainage of wildlife lands (Section 97.481).

Ditches. The Legislature should amend Minnesota Statutes 1953 to provide for the abandonment of any part of a legal ditch, in order to facilitate acquisition (Section 106.661).

Public Waters. The Legislature should amend Minnesota Statutes 1957 as follows:

a) Restrict the changing of beds or channels of public waters (Section 106.021, Subdivision 1).

b) Broaden the authority of the Commissioner of Conservation to include all public waters (Section 106.021, Subdivisions 2 and 4).

LAKES AND STREAMS

Total fish production of Minnesota's northern pike, largemouth bass, walleyes and other species from rearing facilities of the Division of Game and Fish is about 50% below the annual useful need. Fish rescue and removal programs are too limited. And current access to some 2,400 lakes and 700 miles of trout streams is far below the access goal of 5,000 lakes and 5,000 miles of streams.

▶ **The State should expand and accelerate its programs of fish production, through fish control and fishing access sites.**

Fish Propagation. The Division of Game and Fish should allocate more of its funds to fish spawning and rearing areas, fish rescue and rough fish removal.

Access. The Legislature should remove the unreasonable restrictions on the purchase of public access sites that require $1,000 and 5-acre maximum and 150-acre lake minimum.

FOREST LANDS

The maturing of forests in Minnesota is reducing browse and other food plants in the potential habitat for such wildlife as deer and grouse. The availability of wildlife for hunting is also limited because of inadequate access roads to isolated areas.

▶ **Public lands which hold little promise for timber production should be devoted to intensive management for game and fish.**

Wildlife Management. Wildlife population and harvest on forest lands should be increased through cutting, prescribed burning and the development of access roads to isolated areas.

Integration. Since hunting and fishing are increasingly important "products" of the forest, the Commissioner of Conservation should require the Division of Forestry to integrate more closely its land use program with the objectives of the Division of Game and Fish.

PRIVATE LANDS

Many Minnesotans have invested in private hunting and fishing grounds, but little is being done to help them increase game and fish production for improved hunting and fishing.

▶ **The Department of Conservation should offer more guidance and encouragement to those who seek their hunting and fishing on private lands.**

Guidance. The Division of Game and Fish should advise and guide private landowners to help them improve wildlife habitat.

Extension Program. The University of Minnesota and the Division of Game and Fish should work together toward the establishment of a wildlife extension program.

ORGANIZATION

Staff losses are a serious problem in Minnesota's Division of Game and Fish. During the past eight years 35 of its employees – many of them top scientists, and managers – have resigned to take higher paying positions with other states or with Federal agencies. More are on the verge of leaving.

▶ **The State should take steps to help the Division of Game and Fish attract and hold competent personnel.**

Director. The Legislature should place the position of the Director of the Division of Game and Fish in the classified service, and make professional education and experience a necessary qualification.

Personnel. The Director of the Division of Game and Fish and the State Civil Service Commission should be authorized to take the following steps regarding personnel:

a) Establish higher position standards and entrance requirements for personnel in the Sections of Game, of Fisheries, of Research and Planning and of Warden Service.

b) Establish commensurate salaries sufficient to attract and hold competent new personnel, and make possible upgrading and advancement of present qualified personnel.

c) Develop a procedure for utilizing the present classification of Research Scientist.

Staff Development. The Division of Game and Fish should encourage staff development through

a) Utilization, on an individual basis, of educational facilities of the University of Minnesota and other institutions;

b) An in-service training program based on such facilities as the courses on law enforcement, fisheries and real estate appraisal now offered by Federal and other agencies.

Regional Consolidation. The Division of Game and Fish should establish five regions within the State, and consolidate and direct the field operations of the Sections of Game, of Fisheries and of Warden Service through the headquarters of each of these regions.

Research. The Division of Game and Fish should establish a Wildlife Research Advisory Committee composed of competent scientists from the fields of geology, biology, medicine, veterinary medicine, chemistry and soils, to a) evaluate research work under way; b) counsel on proposed research projects; and c) make possible the assistance of scientists in other research fields.

Game Wardens. The Division of Game and Fish should accelerate its program of assigning game wardens additional responsibilities in public relations, conservation education and game and fish management.

Advancement. The Division of Game and Fish should improve the possibilities for advancement based upon qualification and experience, within the entire organization.

SEASONS AND LIMITS

The potential effectiveness of the Division of Game and Fish is lessened because the Commissioner of Conservation does not have full authority to set seasons and bag limits on Minnesota's game and fish.

▶ **The Legislature should delegate to the Commissioner of Conservation full authority to set all seasons and bag limits on game and fish.**

CONSERVATION EDUCATION

The people of Minnesota are not well informed on the fundamental needs and problems of game and fish. Most school teachers do not understand the principles of conservation. Textbooks on the subject are scarce. The news media have not been adequately supplied with conservation material. Education and information services of the Department of Conservation are handicapped by lack of funds.

▶ **The State should take steps to better inform and educate the public on matters of conservation.**

Public Schools. The Commissioner of Education should place more emphasis on the integration of conservation material into public school curricula.

Publicity. The news media of Minnesota should be urged to employ more writers with a background in conservation.

Bureau of Information. The Legislature should furnish more adequate funds to the Bureau of Information of the Department of Conservation.

"Conservation Volunteers". The Division of Game and Fish should rapidly expand the youth educational project known as "Conservation Volunteers".

FINANCES

Management of the Division of Game and Fish is handicapped by several financial problems and inequities. In some cases the Division's funds are used for projects of limited local value, and in other cases they are transferred to activities that do not benefit hunting and fishing. Present revenues and appropriations are inadequate.

▶ **The Division of Game and Fish should take specific steps to achieve not only a balanced budget but a better budget.**

Special Projects. The Commissioner of Conservation should receive and study all proposed projects requiring Game and Fish funds well in advance of legislative sessions to determine whether they qualify for inclusion in the budget.

Legislative Transfers. Since the total income of the Division of Game and Fish comes from hunters and fishermen, the following procedures should govern the transfer of Game and Fish funds:

	Current Biennial Amount
Continue to transfer funds to Department of Administration on present basis	$ 84,000
Use cost accrual accounting system to determine charges by Department of Conservation	813,084
Discontinue transfer of funds to Department of Public Health	100,000
Discontinue transfer of funds to Division of Forestry	80,000
Discontinue use of Game and Fish funds for payment of bounties	280,000
TOTAL	$1,357,084

Revenues. The Legislature should authorize the following increases in game and fish license fees, and substitute issuance fee for auditor's commission:

	Estimated Annual Increase
Resident deer to $5.00	$ 300,000
Resident small game to $3.00 (excluding wetlands surcharge of $1.00)	300,000
Fish house and dark house licenses to $2.00	50,000
Add a trout stamp (other than lake trout) at $2.00	50,000
Issuance fee of 25¢ instead of 10% commission	400,000
ANNUAL INCREASE	$1,100,000
BIENNIAL INCREASE	$2,200,000

Allocations. The Division of Game and Fish should allocate a substantial portion of the proposed increased revenues to the following activities:

- Fish rearing facilities
- Fish rescue and removal operations
- Guidance to private landowners
- Improved salaries for Division personnel
- Education and in-training program for personnel
- Consolidation of regional offices
- Conservation education program
- Replacement of positions lost

Funds. It is estimated that the following funds will be available to the Division of Game and Fish for 1963-65:

Balance	$ 400,000
Receipts from present fees	11,330,000
Receipts from increased fees	2,200,000
	13,930,000
Estimated appropriation cancellations	250,000
	14,180,000
Less desired fund balance	−500,000
TOTAL	$13,680,000

Appropriations. The Legislature should approve appropriations to the Division of Game and Fish from Game and Fish funds of approximately $13,700,000 for the 1963-65 biennium, such appropriations to exclude legislative transfers of Game and Fish funds except those to the Department of Administration and the Department of Conservation.

LAND

TAX-FORFEITED PROPERTY

Biggest problem involving tax-forfeited lands in Minnesota is inadequacy of title. Such titles are merely tax titles, unacceptable to the State or Federal governments in exchange for their lands. It is especially difficult to clear titles when lands are occupied. Action can be brought against lands already forfeited for an indefinite period. There is a lack of detailed knowledge of such properties, which is needed for their intelligent disposal. Another problem is the taxation and forfeiture of divided interests by many small fractional owners.

▶ **The Legislature should amend the laws relating to tax-forfeited lands to make it easier to obtain clear titles.**

Occupied Lands. The Legislature should substitute the requirement of personal service on the occupants of tax-forfeited lands with only the publication of lands and owners as now required for unoccupied lands.

Time Limit. The Legislature should set a time limit for bringing action to void forfeitures, except in the case of tax-exempt lands or when taxes have been paid.

Appraisals. The Legislature should provide for the gathering of detailed information on tax-forfeited lands so that more intelligent decisions can be made on whether to sell or retain such lands in public ownership.

Divided Interests. The Legislature should apply the "partnership principle" to divided interest in lands under tax delinquency so that any tax delinquence would be a lien against all interests in the land, and any forfeiture based on that unpaid tax would apply to the entire tract.

SOIL

The annual income of $1½ billion produced by Minnesota's 145,000 farms comes basically from the soil. But while

Strip cropping in Washington County: Minnesota has more soil types than any non-mountainous state

Minnesota contains more soil types than any other non-mountainous state, only 29% of its land area (17 counties) has been adequately classified as to soils. This lack of soil knowledge is accentuated by the trend to larger farms with fewer farmers, by multiple-use requirements, by the encroachment of highway, urban and industrial construction, by erosion, and by the need for better management of water, forests, wildlife and other natural resources.

▶ **The Legislature should provide additional funds for education in order to improve understanding and knowledge of the soil resources of Minnesota.**

Research. The Legislature should provide additional funds to strengthen field and laboratory research programs relating to soil.

Surveys. The Legislature should support a five-year plan by the Institute of Agriculture, in co-operation with the U.S. Department of Agriculture, to complete the classification of Minnesota soils as a basis for land-use and zoning programs.

Public Education. The Legislature should provide funds to advance public knowledge of basic soil science and its relation to farming, forestry and other natural resources of Minnesota.

PLANNING

Although the enabling legislation has been enacted, many Minnesota counties still lack planning commissions or regulations governing zoning and sub-divisions. Planning groups are handicapped by not having any State-wide guide plan.

▶ **A State-wide guide plan should be prepared to assist all planning groups.**

County Planning. All counties of the State should develop zoning and subdivision regulations.

Co-ordination. The State should accelerate and co-ordinate all programs of land acquisition, highway construction and roadside development.

NORTHEASTERN MINNESOTA

This is the State's most important area for hunting, fishing and general outdoor recreation. But from a crop-bearing standpoint, about a third of it is idle; the other two-thirds is fairly good for specialized crops. It contains some marginal and sub-marginal lands. The counties have title to over a third of these lands through tax forfeiture.

▶ **The State should take steps to improve land-use in Northeastern Minnesota.**

Taxes. Land assessments should be uniformly based on true and full value.

County Controls. Administration of laws relating to boundary fences and weed control should be improved.

Public Services. Counties of Northeastern Minnesota should re-organize their public services to bring them in line with tax revenues based upon ability to pay.

AGRICULTURE

Wheat is the most serious farm surplus in the United States. Minnesota's Red River Valley shares in the problem, although the hard spring wheat it produces does not have the surpluses of some other classes, especially the hard winter wheat of the Great Plains. The major adjustment problems of Minnesota farmers are in dairying and feed grains. Farms will continue to increase in size through consolidation, and the number will increase. Minnesota may expect to share in the increasing demand for meat. Dairying may face surpluses for some time. The State should hold its own in eggs. Turkeys need further adjustment, but Minnesota may continue to lead. Soybeans may expand some more, and there may be further growth in canning crops and sugar beets.

SUMMARY

▶ **The State's agricultural research should stress farm adjustments and utilization of land rather than production.**

Adjustments. The Federal Government should be urged to recognize

a) The need for selective adjustments by classes and qualities of wheat: it should not reduce hard spring wheat at the same rate as classes in greater surplus.

b) The unfavorable effects of metropolitan milk orders on markets for Minnesota dairying.

Economic Opportunities. The State and private organizations should make every effort to encourage non-agricultural development to improve economic opportunities for those who will leave the farm.

Research. Vigorous and effective educational and research activities to help farmers improve upon their ability to compete should be continued and expanded.

WATER

ADMINISTRATIVE

In Minnesota there are no less than 18 different national and State agencies, plus many governmental subdivisions, that deal with water problems under various laws and regulations. The result is overlapping, intermingling and conflicting jurisdictions. A unified approach to these problems is practically impossible.

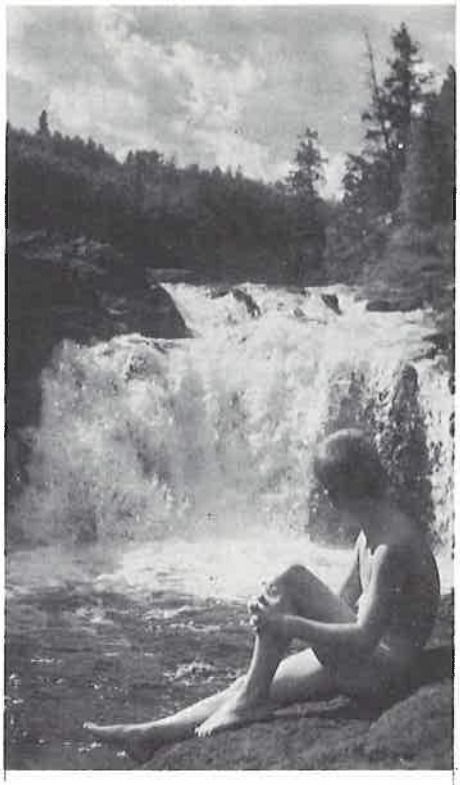
▶ **The State should develop means by which the policies of various agencies concerned with water conservation and use can be better co-ordinated and made more consistent with each other and with policies of local government units.**

Co-ordination. The Governor and his staff should compel co-ordination and co-operation on water problems whenever there is disagreement.

Consolidation. The State should consolidate some of the existing agencies and government divisions that deal with water problems, and should avoid the creation of any new ones.

Water Resources Board. The State should strengthen the Water Resources Board, which now acts in an advisory role, by giving it authority to intervene and make binding decisions in disputes between State agencies involving water policies.

Technical Aid. The State should provide the Water Resources Board with sufficient funds for technical help to perform a State-wide job.



The Arrowhead: come on in, the water's pure

WATER SUPPLY

Minnesota generally enjoys abundant surface water, but its supply of underground for domestic and industrial use varies markedly in different locations. In the metropolitan area of Minneapolis-St. Paul the problem of water supply has become critical because of the recent expansion of the suburbs, which tend to have many shallow wells and septic tanks on small lots.

▶ **Provisions should be made for more intensive studies of the occurrence of water throughout Minnesota, and for planning a long-term water supply for the Twin Cities area.**

Water Studies. The State should establish additional observation wells for recording fluctuations in the water table, and it should increase the rate of topographic mapping.

Reporting Data. The logs of all water wells should be reported to the Department of Conservation.

Twin Cities. The State should establish a competent technical unit to plan the water supply of the Twin Cities area. Its studies should cover

a) The possibility of developing the St. Croix River to supplement water from the Mississippi and underground.

b) The effects of artesian wells on the water table.

c) Data accumulated by the Division of Waters and the U. S. Geological Survey.

d) Analysis of the administrative problem by the Metropolitan Planning Commission.

FLOOD CONTROL

There is no unit in Minnesota's State Government with the funds or the authority to handle matters pertaining to flood control. As a result, local flood control problems are left almost entirely in the hands of the U. S. Army Corps of Engineers.

▶ **The State should participate with the Federal Government in the solution of flood control problems in Minnesota.**

Guarantees. The State should give local units of government authority to guarantee performance of their obligations regarding flood control, under agreements with the U. S. Army Corps of Engineers.

Zoning. The State should give local units of government authority to utilize floodplain zoning to reduce potential damage resulting from unwise occupancy of land subject to flooding.

POLLUTION

The pollution of surface and underground waters of Minnesota — from animals, humans and industry — is a far more serious problem than most people realize. Probably the only sizeable streams in the State that are not dangerously polluted are those along the North Shore of Lake Superior. In the rapidly growing area of the Twin Cities there has been little successful planning for sewage disposal. Throughout the State — especially among the smaller villages — pollution has probably increased faster than it has been remedied. The most severe cases of pollution in Minnesota are those caused by industrial use of water.

▶ **The State should pursue vigorous methods to combat every form of water pollution, wherever it may occur in Minnesota.**

State-wide. The State should take the following steps to strengthen the Water Pollution Control Commission:

a) Re-organize it with more paid technical personnel, fewer ex-officio representatives.

b) Clarify its authority to eliminate pollution of underground, as well as surface, water.

Twin Cities. The State should establish a technical unit under the Water Pollution Control Commission to handle the following pollution matters in the metropolitan area of the Twin Cities:

a) Study and plan for sewage disposal.
b) Build and maintain sewage treatment plants and interceptor or inter-municipal trunk sewers (local laterals and trunk mains remaining under the jurisdiction of municipal collection systems).

SOIL CONSERVATION

The problem of soil conservation in Minnesota is closely related to water.

▶ **The State should take certain steps to improve the conservation of its soil through the proper control of water.**

Drainage. The State should adopt the following policies:

a) Drainage should be confined to agricultural lands, and determined by economic factors of the farming unit or community.
b) Drainage of water areas overlying good agricultural land should be deferred until the need for food or fiber is an economic necessity.
c) Water areas overlying soil unsuited for agricultural use should be preserved for wildlife, recreation or other non-agricultural purposes.

Conflicts. The Water Resources Board should determine matters of conflicting agency policy.

Headwaters. Public funds should be used to conserve water in the headwaters region of Minnesota.

FORESTS

POTENTIAL

Minnesota's forest resource provides full or part-time employment to about 30,000 people in the harvesting and processing of timber products. It is especially important in the 16 northeastern counties (see map, inside front cover), which contain about 80% of the State's forest area, and contribute 90% of the value of its forest products. In 1961 these products were valued at $250 million. The main problem is finding uses and markets for all of the aspen and other low-grade hardwoods that are piling up in Minnesota's forests. If this could be done, the annual income from forest products could be raised by $100 million a year, with a corresponding increase in jobs. Of course these forests also provide much of Minnesota's wildlife and are an important recreational resource.

▶ **The State should improve the value of its forest resource through better management based on such vital needs as research, reforestation, encouragement of industry and public education.**

RESEARCH

If that third of Minnesota's area which is best suited for growing timber is to enjoy an expanding economy, far more vigorous research must be applied to forest management and forest products. This research is needed to increase the productivity of our forest lands from the standpoints of timber, wildlife, water and recreation. Because the State and other public agencies own and manage 56% of Minnesota's forest lands, the State should assume most of the responsibility for providing the additional research and research funds needed.

▶ **The State should provide the University of Minnesota with $220,000 per year of additional funds to carry out specific research programs.**

New Products Research. The Forest Products Laboratory should be more fully staffed if it is to develop marketable products manufactured from the State's low quality and little-used woods, and to conduct fundamental research on such matters as local timber species. Annual cost: $100,000.

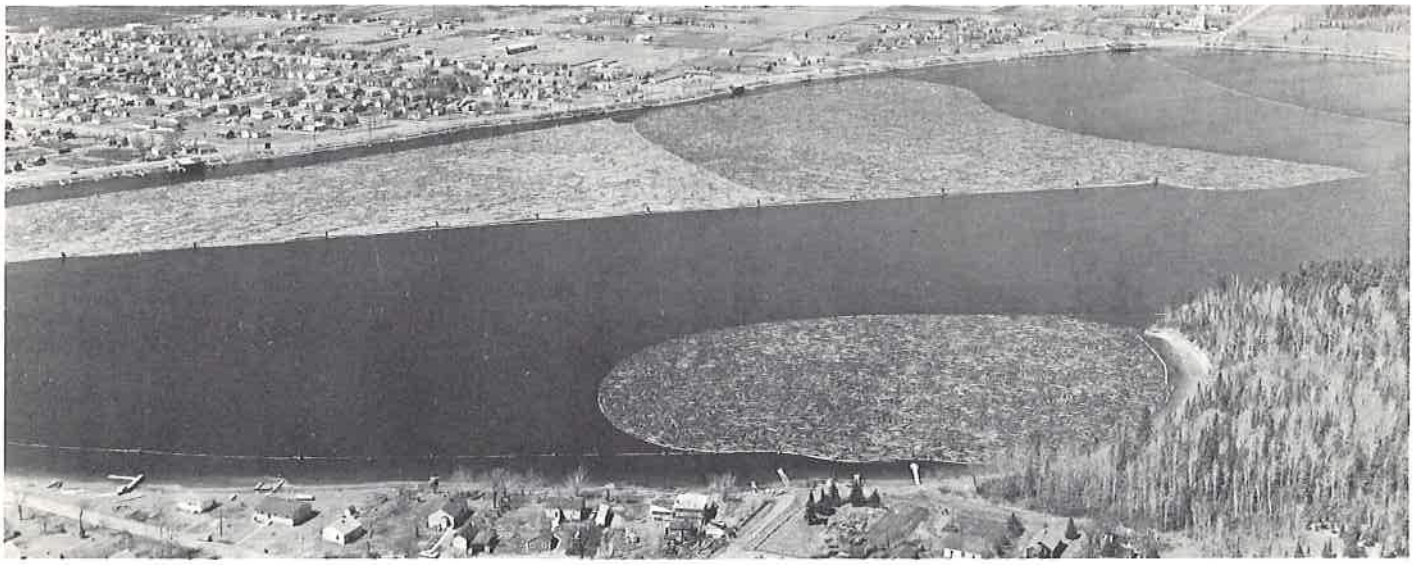
Forest Management Research. The Cloquet Forest Research Center should intensify all phases of its research on problems connected with making forest lands of Minnesota more productive. Annual cost: $50,000.

Related Research. The School of Forestry should intensify its research on such matters as forest ecology, economics, protection, genetics, measurements, tree physiology, recreation, watershed management and wildlife. Annual cost: $50,000.

Tree Disease and Insect Research. The University should intensify its research on all tree diseases and insects in order to control present and threatened epidemics. Annual cost: $20,000.

Experiment Station. The U. S. Department of Agriculture should be urged to expand the important research activities now being conducted by the Lake States Forest Experiment Station.

Pulpwood on Rainy River: a 58 million-dollar payroll



REFORESTATION

About 25% of Minnesota's commercial forest area is non-stocked, while another 10% is poorly stocked. To be made productive, this land, totaling about five million acres, should be reforested with conifers. The biggest reforestation problem is on the State's abundant swamplands.

▶ **As the largest owner of non-stocked forest lands, the State should activate a more vigorous reforestation program.**

Uplands. The Department of Conservation should proceed with its program to reforest these lands at a rate increasing from 5,500 acres in 1964, at a cost of $275,000, to 12,500 acres in 1973, at a cost of $750,000. Reforestation goal: 80,000 acres by 1973.

Swamplands. Reforestation of swamplands should be made the subject of joint research by the Division of Forestry, the University of Minnesota and the Lake States Forest Experiment Station, as well as by the various forest industries. Such research should be continued until this problem is solved. Cost, 1963-65 biennium: $25,000.

Nurseries. Surplus nursery stock should be planted on State lands by the Division of Forestry, and an appropriation, under the control of the Legislative Advisory Commission, should be made available exclusively for this purpose.

County Lands. The counties which now manage several hundred thousand acres of non-stocked uplands should increase their present planting rate of 2,500 acres per year. As titleholder of these lands, the State should provide funds for this purpose.

FOREST INDUSTRIES

The pulp and paper industry, with an annual payroll of some $58 million, produces over 75% of the total forest products income developed from Minnesota-grown wood. How can we encourage this and other forest products industries to expand present operations and utilize more of Minnesota's abundant hardwoods – aspen, birch, elm, etc.?

▶ **The State should take specific steps to encourage early expansion of forest products industries in Minnesota.**

Forest Land Ownership. For more adequate protection of plant and capital investment, a total of 330,000 additional acres of State and county forest land should be made available for purchase.

"Tree Growth" Tax. The rate of this tax should be reduced from 30% to 20%, and the State should assist local taxing units through a 10¢ per acre grant-in-aid. Cost to the State for the 100,000 acres now entered under this law would be $10,000 per year.

Appeals. Forest owners should have a greater opportunity to appeal adverse decisions in connection with "Tree Growth" and "Auxiliary Forest" tax laws.

Personal Property Tax. In determining personal property taxes, forest industries should enjoy the same ratio of assessed value to "full and true" value as now authorized for agricultural equipment and inventories.

ACCESS ROADS

A considerable portion of State-owned timber is not served by existent public highways. Much of this State-owned timber is overmature, and must be marketed soon if its full value is to be salvaged. Access roads to such timber are needed. The increased income which the State would receive for timber served by access roads, over and above what it might receive if such roads were not provided, would more than offset their cost. These roads are important to local settlers since they make timber available via "Section 1" sales. They also greatly assist the State in fire protection and in various activities connected with forest management. The Division of Forestry has built and is trying to maintain approximately 1,150 miles of access roads, of which about 850 miles are all-weather roads. Maintenance of these roads is not adequate.

▶ **The State should increase its maintenance and expansion of access roads.**

Requirements. By 1970 about 130 miles of access roads already constructed should be reconstructed, and about 300 miles of new road should be added. The annual cost of recommended maintenance is $65,000; of reconstruction plus expansion, $90,000.

Other Funds. Since access roads are extensively used by hunters and fishermen, the Division of Game and Fish should continue to assign "Pittman-Robertson" funds to the Division of Forestry to help maintain these roads.

FOREST INVENTORIES

Because of constantly changing forest conditions caused by man and nature, good management of this Minnesota resource (especially in the 16 northeastern counties) requires accurate, up-to-date knowledge. Such knowledge can be gained only through proper and regular forest inventories.

▶ **Inventories of Minnesota forests should be completed at regular intervals.**

Aerial Photography. The State should provide funds biennially, beginning in 1963, for the photographing of about 1/5 of the 16-county forest land area every two years. (Photography needed elsewhere will be provided by the Agricultural Stabilization Committee.)

COUNTY FORESTRY

Since the counties and their governmental subdivisions have a 90% interest in the net income received from the sale of tax-forfeited land and timber, the Legislature has assigned the management of these lands to the counties. As a result of this action Minnesota has a larger proportion of commercial forest lands (20%) under county management than any other state.

▶ **Since the State holds title to these lands, it should take steps to help the counties improve their management of them.**

Personnel. The State should help those counties having land departments to offer such salaries and job security as will attract competent professional foresters to their employ.

Reforestation. The State should help the counties increase the rate of reforesting their non-stocked lands.

Tax-forfeited Lands. Counties should be urged to offer for sale, under proper safeguards, more of their tax-forfeited lands.

Zoning. Up-to-date zoning should be undertaken in all counties.

IRR&R. The State should make every effort to continue the forestry work of the Iron Range Resources and Rehabilitation Commission. It is of great importance to the northeastern counties. If the occupation tax becomes insufficient to finance the IRR&R's forestry program, the responsibility for that program should be assigned to the Department of Conservation.

CONSERVATION EDUCATION

Forests and forestry are vital to the economy and well-being of Minnesota, yet few people fully understand this subject or the problems involved in the conservation of all natural resources.

SUMMARY

▶ The State should step up its conservation education program at all education levels.

Teacher Training. All colleges and universities of the State involved in teacher training should require a knowledge of conservation and natural resources, and should provide courses for this purpose. The conservation and natural resources workshops now offered by a few institutions should be expanded and multiplied.

Scholarships. A concerted effort should be made by conservation agencies, groups and individuals to develop more significant scholarship or fellowship support to make possible and stimulate attendance at teacher-training workshops.

Study Committee. Because of the importance of this subject to the future of the entire natural resources management and conservation fields, the Governor should appoint a study committee to prepare a report on the needs and the necessary actions to be taken.

MINERALS

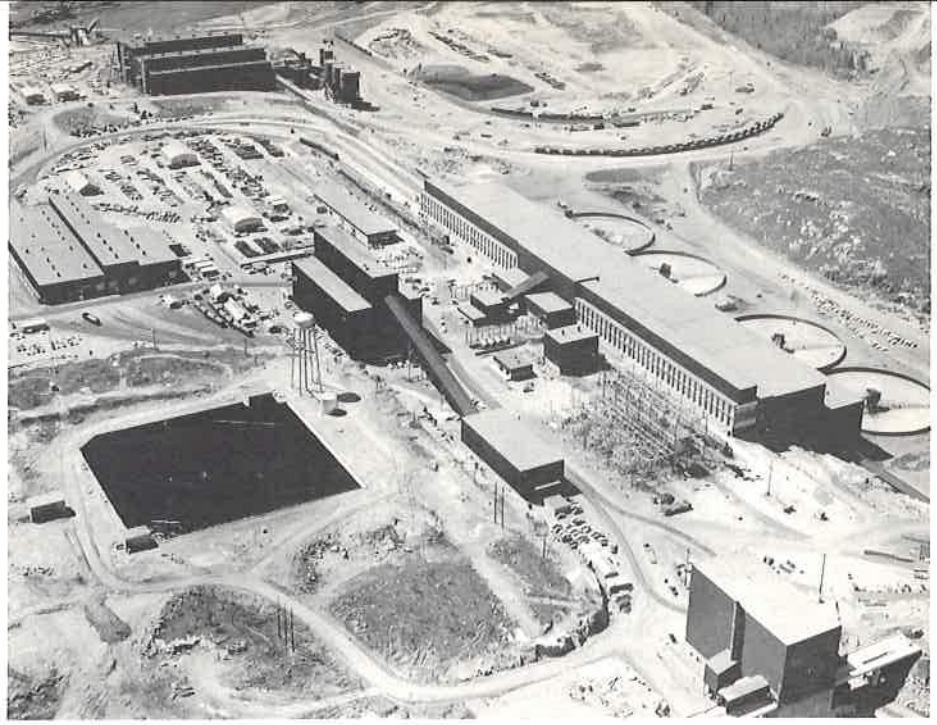
OPPORTUNITIES

New economic forces, coupled with the depletion of high-grade iron ore reserves and the discovery of immense deposits in other parts of the world, have changed Minnesota's mining industry from one of monopoly to one of tough competition. However, the State has a real opportunity, in the continued development of the growing taconite industry, of attracting an additional 40 million tons of annual plant capacity in the next 25 years. This is a distinct possibility if the people and the Government encourage the industry. The rewards for Minnesota are considerable: Thousands of permanent year-'round jobs and some $1½ billion of new investments here.

▶ If Minnesota is to realize its opportunity to achieve a growing mineral industry, the people, through government, should provide that industry with certain specific incentives.

MINERAL RESERVES

Minnesota's reserves of marketable high-grade "natural ores" have dropped to a level only enough to last about ten years, at which time replacement taconite production should be achieved. In the meantime, during this transition period, Minnesota's mining industry faces



Erie's taconite plant at Hoyt Lakes: a real opportunity

an urgent need for increased beneficiation of low-grade iron ores and the further development of taconites and other mineral resources.

▶ The State and the mining communities should provide the mining industry with tax incentives, co-operate with it in intensified research programs, and help create a more favorable public attitude.

Reclassification. The State should expedite, under the semi-taconite laws, the reclassification of natural ores based on:

a) Submittal of metallurgical test data.
b) Proposed flow sheet for additional facilities.
c) Evidence of definite plans to build such additions.

Mineral Development. The Minnesota Geological Survey should accelerate its development of taconites and other mineral resources through expanded geologic mapping and geophysical investigations, and should serve as a central collection agency for exploratory geologic data.

Taconite Exploration. The State should drill a series of ten deep holes on State-owned lands along the southern edge of the Mesabi Range at locations so selected that the iron formation is encountered at depths of 600 to 1,000 feet. Resulting cores should be studied by geologists, mining and metallurgical engineers to determine a) mineralogical characteristics; b) underground mining characteristics; and c) beneficiation results. Estimated cost: $100,000.

Publication of Data. All pertinent exploration and development data acquired from drill holes in Minnesota should be reported by the mining companies to a State agency, and held in confidence for five years before being published.

MINERAL CONTROL

Minnesota is at a competitive disadvantage in the development of minerals, especially taconite, because of serious problems relating to mineral reservations and mineral control. Division of ownership often makes it difficult to acquire large contiguous blocks essential to economic operations. In some cases, a company may control vast quantities of taconite lands, adequate for several centuries of production, at little or no cost. Royalties on leases negotiated in the 1950 decade are too high.

▶ The State should ease the restrictions which present procedures of mineral rights exert upon the mining industry.

Mineral Rights. The Legislature should take the following steps regarding mineral reservations:

a) Provide that mineral reservations be taxed so that they contribute on an equal basis with other types of property toward the cost of government.
b) Provide that either the mineral owner or the surface owner may have the mineral rights in any tract assessed and taxed separately from the surface.
c) Provide a method of assigning values to mineral reservations (subject to review by courts).

Surface Compensation. The State should declare that reservations holding the right to use, acquire or destroy the surface without full compensation are contrary to public policy, unless such rights are exercised within a reasonable period.

"Holding Reserves". The Legislature should amend the Taconite Law to de-

fine "Holding Reserves" of good taconite lands, and to give such reserves the full protection of current laws for a period of ten years, after which the holding tax per acre on established inactive reserves should be escalated at a reasonable rate.

Royalties. To help the mining industry achieve more competitive costs, owners of mineral rights should be encouraged to re-negotiate leases and royalty rates on iron ore reserves.

Leases. To help attract private capital for exploration and development of Minnesota's industrial minerals, such as nickel, copper and limestone, the State and Federal Governments should reconsider their policies in regard to the leasing of mineral rights.

LAND CONTROL

Minnesota is at a competitive disadvantage in the development of mineral reserves because of problems relating to land and surface rights required for various mining operations.

▶ **The State should encourage the taconite industry by taking specific steps to facilitate land control.**

Surface Rights. The State should not only retain the statute granting the power of eminent domain to taconite companies, but should consider extending it to other types of mineral properties, such as nickel and copper.

Public Lands. The State, county and Federal Governments should establish procedures to help mining companies acquire public lands that are required for the development of mineral projects.

Municipal Lands. Certain political subdivisions in the Iron Range area should be consolidated, and represented by groups with authority to act on matters regarding land control and acquisition.

EMPLOYMENT

About 20,000 people are directly employed by Minnesota's mineral industries. Of these, some 17,000 are employed by the iron ore industry. The big problem under present-day conditions and the principal objective of our mineral policy is to provide increasing job opportunities, and at the same time to keep labor costs competitive.

▶ **The State should help the mining industry provide year 'round job opportunities and to increase the productivity of the labor force.**

Re-training. The State and Federal Governments should accelerate the program of re-training personnel for year 'round jobs under changing conditions in the mining industry.

Productivity. Both industry and labor should make every effort to increase productivity commensurate with the increased costs that have taken place during the past ten years.

TAXATION

Since 1900 Minnesota has taxed the iron ore industry at a higher rate than that of any other group, including other mineral industries. Property taxes on iron ore reserves, called ad valorem taxes, are used for local community purposes. Rates and assessment practices are such that these taxes are three times those in force for comparable full and true values of property used by manufacturing industries, and over seven times those of property used by farming enterprises. Community expenses have continued on a high level, so that this tax load, when spread over a diminishing production, now approaches $1 per ton for natural ores. The burden of the corporate tax (occupation and royalty) paid to the State by the mining companies is again three times that paid by other industries through the corporate income tax. In general, Minnesota taxes mining operations at a higher rate than do other states and countries. Taxation is thus one of the major problems confronting the mining industry of Minnesota today.

▶ **Minnesota tax laws relating to both natural iron ores and taconite should be revised in several respects.**

Deductions. In computing State occupational taxes, natural ore producers should be allowed to deduct:

a) expenditures for exploration and research;
b) contributions made in Minnesota;
c) interest on money borrowed for use in Minnesota.

Depletion. The Federal Government should continue the depletion allowances now permitted the mining companies in computing Federal income taxes.

Amortization. The Federal Government should permit the mining companies to take advantage of rapid amortization.

Taconite Taxes. The State should assure the taconite industry long-term stabilized tax treatment. The preferred course is through the so-called "taconite amendment", waiving the requirement relating to a minimum expenditure of $250 million within eight years, so as not to discourage plant investments by small companies. Second choice, considering the urgency, would be immediate passage of a legislative act, to be followed later by an amendment.

Taconite Production Tax. No change should be made at this time for that section of the Taconite Tax Law imposing a production tax in lieu of other ad valorem taxes, since numerous special ad valorem tax laws have already been enacted to take care of local problems at existing taconite operations. Such problems for new operations cannot be anticipated, but may be met in the future as they arise.

Property Taxes. Iron mining communities of Minnesota should continue their efforts toward cost-cutting and the equalization of property valuations so that ad valorem taxes can be adjusted to a more reasonable basis.

State Aid. The State should provide assistance for the temporary maintenance of essential services for those communities which a) have lost mineral values to a serious extent; b) have cut services and costs to a reasonable minimum; and c) have non-mineral properties paying taxes at high rates.

Mining Communities. The Municipal Reference Bureau of the University should co-operate with various departments of the State in making a thorough professional study of the consolidation of Iron Range governments and school districts, for the purpose of providing more efficient services and education at lower costs.

RESEARCH

Since the life expectancy of Minnesota's natural ores has been reduced to about ten years, the industry faces a transition period to full taconite production, during which it will need to make greater use of beneficiated ores. Methods must also be developed to produce taconite concentrates of higher quality and better structure so that Minnesota's pellets remain competitive with the excellent materials being produced elsewhere. Tax and royalty income to the State and its communities from iron mining now averages $55 million a year. Less than 1% of this, or only ¾¢ per ton of ore shipments, is spent for the State-supported research that is necessary to help perpetuate that income.

▶ **The State should provide incentives to the mining industry to stimulate research, plant investment and long-range planning during the next ten years.**

Beneficiation. During this critical period, the Legislature should increase the annual appropriation of the Mines Experiment Station from $250,000 to $500,000 so that research on new methods of concentrating and agglomerating the taconites and semi-taconites may be expanded.

Direct Reduction. Activities relating to the production of metallic iron through direct reduction should follow these main courses:

a) Market studies and economic appraisals of the more promising methods should be conducted by independent engineering firms.
b) Research by the Mines Experiment Station and State groups should be directed to the problem of reserves and the mineralogical characteristics of those stockpiles and accessible materials that are best adapted to direct reduction processes.
c) Commercial facilities should not be constructed with public funds unless economic feasibility is proven.

TRANSPORTATION

Because of the opening of the St. Lawrence Seaway and lower rail freight rates in the east and Canada, iron ores shipped via Lake Superior no longer enjoy the competitive advantage of lower transportation costs. Foreign vessels, many of which are subsidized, have lower freight rates than American vessels. However, they are not permitted to haul cargoes between U. S. lake ports. Another competitive disadvantage is Minnesota's short shipping season.

▶ **The State should help the mining industry offset the competitive disadvantage of higher transportation costs.**

Railroads. The State should encourage a consolidation of the four railroads that now transport Minnesota iron ores to Lake Superior ports, and of their docking facilities.

Ore Boats. The State should urge the Federal Government to

a) Establish a subsidy for domestic lake carriers representing the difference between their costs and those of vessels plying between foreign ports and lower lake ports of the United States.
b) Study the possibility of keeping the lakes and channels open for a longer shipping season.

Integrated Trains. The State, together with the railroads and the mining industry, should study the potentials of using integrated trains for the year 'round movement of ores and pellets directly from mine to furnace.

WATER SUPPLY

Although so far no difficulties have arisen in regard to permits for the appropriation of water by mining companies, increased demands by new taconite plants could cause problems.

▶ **The State should take steps now to assure the mining industry an adequate water supply.**

Water Rights. The Legislature should establish procedures to simplify and expedite the granting of water rights to mining companies.

FUELS

Cheap fuel is essential to a growing mineral industry. However, except for peat, which is very low in calorific content, Minnesota has no fuel resources of its own.

▶ **The State should intensify its research program to make available low-cost fuels for metallurgical processes.**

Lignite and Gas. The Mines Experiment Station and the U. S. Bureau of Mines Research Center at Minneapolis should co-operate with equivalent agencies of North Dakota to expand research on the use of lignite and natural gas for magnetic roasting of ores and the pre-reducing of pellets.

Gas Storage. The Minnesota Geological Survey should co-operate with suppliers of natural gas in the study of underground sites for surge storage in order to provide the mining industry with year 'round service of that fuel.

OTHER MINERALS

Although Minnesota has developed such non-metallic minerals as building stone, sand and gravel, and expanded shale, little has been done to explore other mineral resources such as limestone and marl, clays and shales, mica and feldspar. The metallic mineral deposits of copper-nickel and manganiferous iron ores have also been neglected.

▶ **The State should attempt to attract new industries based on mineral deposits other than iron ore.**

Research. The State should provide additional funds to the Minnesota Geological Survey and the Mines Experiment Station for the purpose of conducting a more aggressive program of geological and processing investigations on all metallic and non-metallic mineral deposits in Minnesota.

Publicity. Results of research on Minnesota's mineral deposits should be given broad publicity among out-of-State industries and others.

PEAT

Minnesota's estimated five billion tons of peat, occupying one-tenth of the State's land area, represents half the Nation's supply of this material. However, the current U. S. consumption of peat is only about one million tons a year, used mostly for soil conditioning and special horticultural applications.

▶ **Because of its vast supplies, the State should help develop new uses for peat, especially in the area of agricultural application.**

Research. The research programs on the horticultural and chemical uses of peat now being conducted by the Iron Range Resources and Rehabilitation Commission should be continued on a long-term basis.

GOVERNMENTAL POLICY

Because of the National interest, Minnesota and its mining communities cannot count on the establishment of Federal stockpiling or tariff protection to help rebuild the iron ore industry.

▶ **The State should rely on its own efforts to rebuild the iron ore industry through more competitive costs and quality.**

PUBLIC INTEREST

The attitude of the public toward Minnesota's iron ore industry is generally based upon an out-dated image of that industry as it existed some 20 years ago. Rebuilding Minnesota's mining industry depends upon public understanding of that industry as it is today.

▶ **The public should be better informed on all phases of Minnesota's mining industry.**

Educational Program. The University of Minnesota, with the support of its President, should undertake a program of public education covering the State's minerals, with special emphasis on the iron ore industry and its problems in the sphere of world competition.

RECREATION

TRENDS

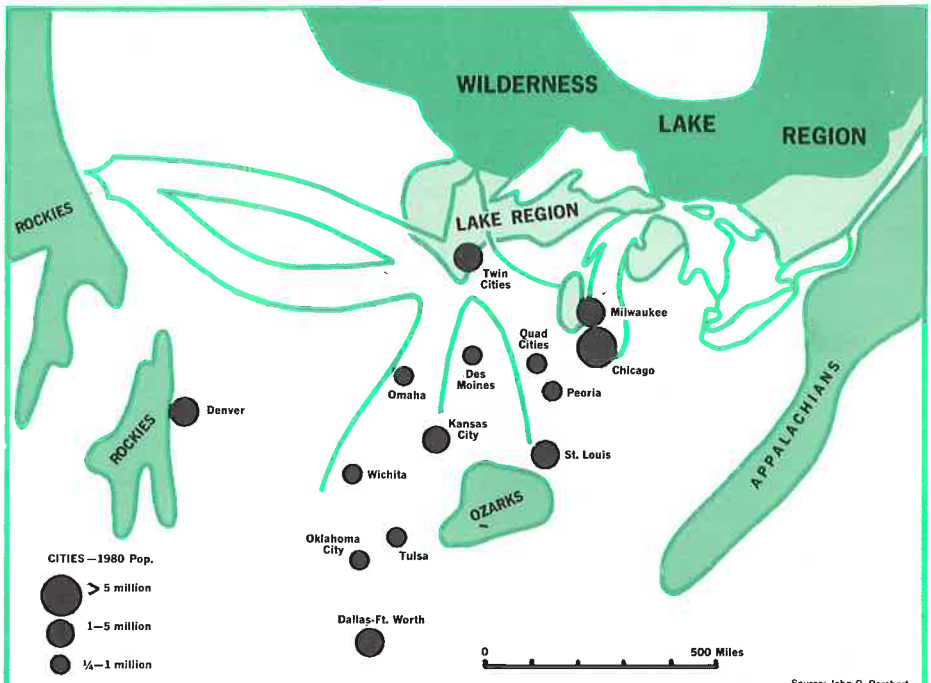
More People, More Leisure

There are constantly increasing numbers of people in central United States many of whom are facing fewer financial restrictions than ever before in their search for the abundant life. These circumstances create problems of expanding dimensions with respect to all of the natural resources of Minnesota. Increased leisure time has also been provided Americans through reduced work weeks, longer vacations and earlier retirements. In addition, they have greater mobility, primarily as a result of more and better airplanes, automobiles and highways. Increasing urbanization, another phenomenon of our times, affects their lives in many ways. It really is not surprising, therefore, that the demands for outdoor recreation are doubling each decade.

On the other hand, Minnesota's supply of lands and waters is essentially static. Increasing populations place numerous demands upon these basic resources. There is a growing need for a long-range plan for land and water development in Minnesota. Perhaps most urgent and important at the present time, is the need for a developmental policy relating to scenic and recreational lands and waters.

Gateway to Wilderness (see map)

The major inland recreation regions which are readily accessible to the people of interior United States include the Appalachian and Ozark highlands on the south and east, the Rockies to the west and the glaciated lake region spreading across the north. The southern margins of the glaciated lake region are widely farmed, but the remainder, mostly in northeastern Minnesota and Canada, is relatively wild. It represents the largest forest wilderness of North America and contains at least 90% of the inland lake surface of the Western Hemisphere. Usable lakes are the major recreational resource.



INLAND RECREATION REGIONS OF THE U.S.

Minnesota is the natural gateway to this wilderness lake region for that part of the Midwest from Chicago westward, for the Mid-Continent and for the Southwest. It is the gateway into that region for from one-fourth to one-third of the National population.

In this regional picture you see that three corridors of travel across Minnesota are apparent. One is the corridor between the St. Louis, Chicago, Milwaukee areas and the glaciated lake region. A second joins Omaha, Kansas City, the Mid-Continent and the Southwest, including Oklahoma and Texas, with northern Minnesota. The third crosses Minnesota, joining Chicago and the East with the Northern Rockies and the Pacific Northwest.

The lakes of the non-wilderness part of central and north-central Minnesota provide cottage and resort recreational use for Minnesotans and for people from Illinois, Iowa and other nearby states. The urban region of southeastern Minnesota, including the metropolitan Twin Cities area, now provides a substantial part of the consumer demand for these recreational resources. Thus the continued growth of this region is important to the development of the non-wilderness lake region.

Among the major metropolitan areas of the United States, the Twin Cities area is unique in its proximity to the glaciated lake region. There is evidence that this situation has been important in attracting and holding people with skills and entrepreneurial abilities since early white settlement. If the growth of the metropolitan area is vital to the continued development of the non-wilderness lake region, so the maintenance of desirable conditions in the lake region is essential to the growth of the Twin Cities, and therefore to the whole State.

These circumstances strongly imply the need for far-sighted public policies relating to the expansion and development of the outdoor recreational resources of the State. Among the states east of the Great Plains, Minnesota is fortunate in having relative abundance of land and water. Minnesotans are not yet confronted with the "race for open space" to the same degree that others are. Some states find that urban sprawl accompanied by inadequate planning has resulted in an environment which can be made acceptable only at tremendous expense.

Priorities

The Council believes that planning for outdoor recreation is essential. Research is also necessary in an area where carefully documented investigation is remarkably deficient. In order to accomplish these major objectives, it will be necessary to establish an appropriate administrative organization.

TASK FORCE

EDWIN P. CHAPMAN, Chairman
WILLIAM F. DIETRICH
DONALD P. DUNCAN
CLIFTON E. FRENCH
C. DAVID LOEKS
THOMAS H. SWAIN

In addition to planning and research, a very high priority need in Minnesota is the reservation of lands, both public and private, for recreational use or for recreational use in combination with other compatible uses of land and water. Recognizing the primary problem in the proposed program, the Council suggests a financing plan to accomplish the needed development.

PLANNING

Need for Research

It is probable that no activity involving so many people and so basic to our way of life has received less attention from qualified scientists. Only very recently has any serious research effort been directed toward outdoor recreation, aside from game and fish management. With the current and prospective increase in demands and with what often is now an ineffective use of land to meet them, it is imperative that greatly increased research be focused on the problems.

Until an understanding of the human benefits to be derived from outdoor recreation is available, it is impossible to arrive at soundly based recommendations as to the kind and amount of resources to be allocated to this use. In the face of increasing demands upon both land and water for other purposes, policy-makers and land managers will have to choose among competing uses.

Misallocation of basic resources is likely unless a bulwark of research in outdoor recreation is provided. The research required to meet the need can be classified into three categories: 1) fundamental; 2) applied management; 3) inventory. All are essential.

Fundamental Research

Fundamental research would be directed primarily, although not exclusively, toward an understanding of the human element in outdoor recreation. What are the values of outdoor recreation as contrasted with other forms of recreation? What is the effect of outdoor recreation upon mental health and juvenile behavior? How does it fit into the social values of our society? What is the effect of urbanization, of changing age-class distributions, of changing occupations, of incomes and educational levels upon outdoor recreational preferences? Many of the decisions made with respect to resource-use in relation to recreation are value judgments. This will doubtless continue to be true, and emphasizes the need for composite value judgments based on user opinion in addition to the technical judgment of the administrator.

Applied Management Research

Applied management research needs to be directed toward the solution of difficult current land management problems. What is the effect of heavy recreational use upon soil and plant cover? How can big game populations be managed to maintain population levels at the land's carrying capacity or at satisfactory levels of hunter success most effectively? How can people be persuaded to use recreational lands more completely instead of concentrating their use on a relatively small portion of the area? To what degree should interpretive facilities be provided on a particular area? What kinds of outdoor education are most important? What are effective methods for preventing misuse of the land and facilities? How can private enterprise be encouraged to participate more effectively in meeting demand? These and many other problems of immediate importance require research for answers.

Much fundamental and applied management research has application more or less universally. Some will be undertaken by other states and some by agencies of the Federal Government. However, specific segments are particularly applicable to Minnesota problems, and Minnesotans are particularly well qualified to perform certain aspects of the research. Co-ordination of the total research effort to avoid duplication is necessary, and some assistance in this direction undoubtedly will be provided by the newly formed Federal Bureau of Outdoor Recreation.

Inventory Research

The need for current statistical information accompanied by an explanation of the trends is essential to adequate planning. Minnesota's economic welfare, following declines in other segments of the economy, may depend to a greater degree upon the tourist business. It is important that we know what is happening to it. Such information is also essential background to applied management and to many fundamental studies. Since this kind of research must be done by the several states, Minnesota's responsibility here is clear.

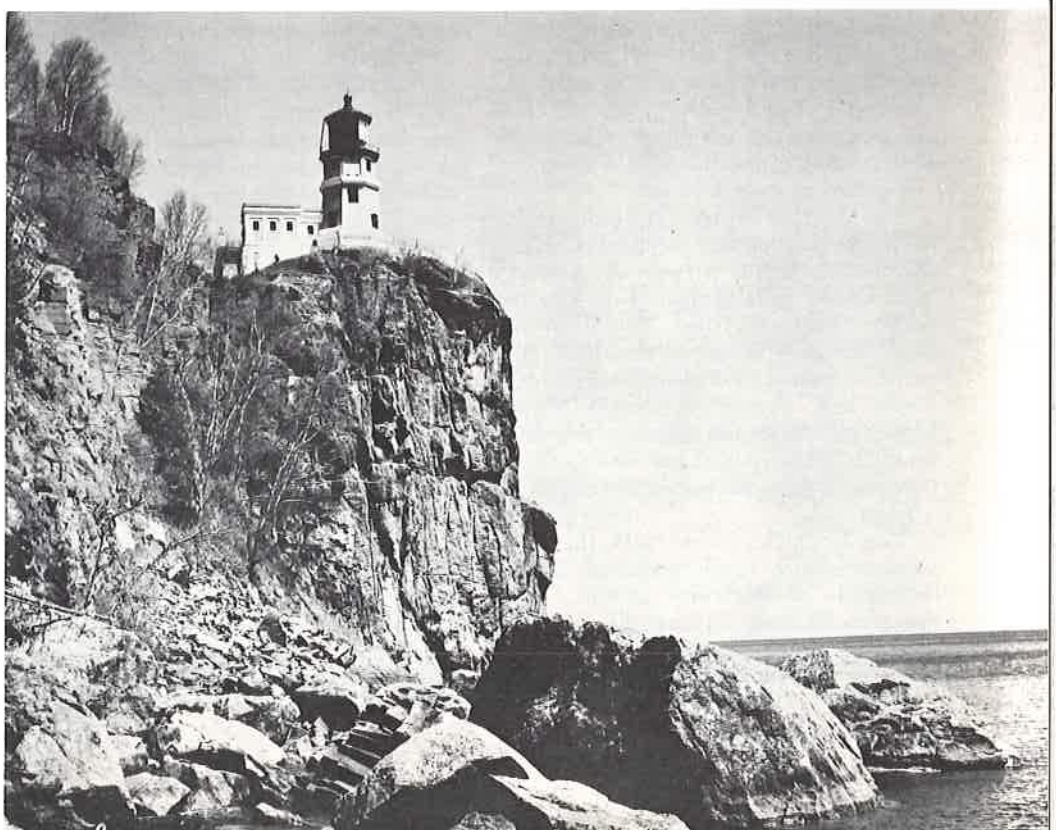
Research Requirements

The kinds of research proposed require a wide array of scientists including psychologists, sociologists, economists, demographers, geographers, educators, political scientists, ecologists, foresters, soil scientists and many others. The University and Minnesota's State and private colleges have individuals well-qualified to undertake such research, as do some other State and Federal agencies in Minnesota engaged in research.

The type and quantity of research needed will not be forthcoming without financial encouragement. The Federal Bureau of Outdoor Recreation will undoubtedly assist by providing co-operative funds.

Considering the magnitude of the tourist business in Minnesota (about $350 million annually) and the expanded program proposed herein, an extremely modest goal for research would be a

North Shore's Split Rock: more light should be shed on recreation



$200,000 annual expenditure by 1970. Current expenditures in Minnesota for research directed toward outdoor recreation (exclusive of game and fish) probably do not exceed $25,000 annually. This must be increased sharply. The proposal envisions $50,000 annually for the biennium 1963-65, $100,000 annually for the next two years, $150,000 annually for the following biennium, with $200,000 each year during 1969-71.

Need for State Plan

A carefully conceived State-wide plan should be evolved concurrently with the development of a research program.

Land and facilities for outdoor recreation in Minnesota are now provided by the U. S. Forest Service, by the National Park Service, by the Federal Bureau of Sport Fisheries and Wildlife, by the U. S. Army Engineers, by the Division of State Parks, by the Division of Forestry, by the Division of Game and Fish, by the State Highway Department, by county governments, by municipalities, by large private companies, by the resort industry, by small private landowners, by community and charitable groups, by service clubs and by other public and private organizations. Yet development by these groups is proceeding with little or no co-ordination.

Many recreation areas have been established because of pressures, opportunities or political expedience rather than because they provided the best possible area to meet the most pressing of existing needs. This has resulted because of the absence of any overall planning. Since outdoor recreation is potentially an even more significant segment of our economy than the $350 million estimated currently, since the citizens of Minnesota and neighboring states will require increasing access to the out-of-doors, and since the funds for development of such opportunities are limited, it is imperative that maximum effectiveness in the use of available funds be assured.

The Outdoor Recreation Resources Review Commission has recommended that "Each state should prepare a long-range plan for the development of outdoor recreation opportunities. . . . The plan should take account of the total state resource base and of demands from residents and visitors. It should identify objectives. It should estimate the funds needed. Finally, it should set forth the successive steps necessary to achieve the objectives."

The Council concurs with these recommendations. If the proposed Federal legislation to authorize a $50 million program to assist states in planning outdoor recreation programs is effected, Minnesota's share will probably lie between $800,000 and $1 million. The bill provides that states may obtain up to 75% of their planning costs during the first year; up to 50% in the second year; and no more than 35% during each of the next three years.

Should this legislation and the necessary appropriation be made, and should Minnesota take full advantage of the Federal funds available to it, matching State funds would probably total between $900,000 and $1,200,000 over the five-year period. However, the Council believes that an adequate plan for Minnesota could be provided at about half this cost. A portion might be secured from foundation or other private sources, but the cooperative funds for State-wide recreational planning should be made available in their entirety from State funds if not available elsewhere.

If such a long-range plan seeking the co-ordination of many public agencies, semi-private and private organizations, and others, is to be most effective, the planning body should be independent in its makeup. Something comparable to the Outdoor Recreation Resources Review Commission, which functioned so effectively at the Federal level, is a reasonable recommendation for establishing a plan of outdoor recreational development in Minnesota.

Administration

A Division of Outdoor Recreation should be established within the Department of Conservation. Such a division would not administer lands used for outdoor recreation since other divisions now perform this function. However, it would a) be responsible for the allocation of research funds; b) undertake prosecution and co-ordination of the overall recreational plan; c) assume responsibility for effective utilization of matching Federal funds which appear to be forthcoming; and d) administer matching funds provided by the State to assist counties and municipalities in their development of recreational lands and water.

RECREATIONAL LANDS

A Pressing Problem

Minnesota has a relatively high proportion of its land in public ownership, an acreage far more than adequate to meet public recreational needs. The problem, however, is one of distribution. The northeastern counties, with about 13½% of the population, have 63% of the land in public ownership, whereas 51 southern counties, with 75% of the population and a roughly equivalent land area, have less than 2% in public ownership. Particularly in this section of the State, private lands must help meet the need.

Many kinds of outdoor recreation do not require large acreages of land. It is important, however, that lands and waters having unique recreational attractions be made available to the public. It is also important that the populations in the larger municipal centers be provided adequate open space for outdoor recreation.

The problem is a pressing one. Open lands in such centers of population as Hennepin and Ramsey Counties are fast disappearing. Waterfront areas available for public use are decreasing rapidly. Some of the most scenic areas of the State are not open to the public.

Such lands must be made available while it is still possible.

Farm land values in the seven-county metropolitan area rose 58% in the five years 1954 to 1959, whereas in the remaining counties of the State, the rise was 45% during the same period. Early acquisition (where acquisition is necessary) will assure minimal costs. In addition, public access to recreational lands which will remain in private ownership needs exploration.

State Parks

Several State park land-need estimates have been made over the past 30 years. These generally agree on a goal of about 200,000 acres for the State park system.

In co-operation with the National Park Service, the Division of State Parks has examined potential park sites throughout the State and has recommended 36 new units. In addition, certain private inholdings and areas adjacent to boundaries of existing units should be acquired. These proposed additions comprise over 50,000 acres and will bring the total in the system to about 180,000 acres.

The Council accepts this carefully documented statement relating to present State park needs. The estimated current cost is $3,750,000.

Hardwood Forest

The proposed Minnesota Hardwood Memorial Forest extending from the Twin Cities to Iowa along the west side of the Mississippi and along the wooded valleys of such tributaries as the Root, Zumbro, Cannon and Vermillion Rivers, has been initially suggested as embracing 200,000 acres at an estimated cost of $4 million.

A feasible objective for 1970 calls for 50,000 acres to be acquired at a cost of $1 million. The Council recommends study of the proposed program prior to additional acquisitions.

Hardwood Memorial Forest below Red Wing: 50,000 acres by 1970?

Highway Facilities

Minnesota presently provides 329 wayside areas along the 12,000 miles of trunk highways. The acquisition and/or development of 57 more will provide such units within 50 miles of each other on all State highways. In addition to wayside needs major parkways along the Mississippi, the North Shore of Lake Superior, the Minnesota and the St. Croix Rivers should be established. Development of the Great River Road parkway will provide attractions along the important travel corridor from the Southeast.

Funds made available for highway construction and maintenance should provide for an adequate system of wayside and parking developments.

County Lands (see table, next page)

County recreational lands should provide relatively large, undeveloped, naturalistic or historic areas for enjoyment by the people. Such areas are not intended to provide playgrounds in the usual municipal sense nor do they need to possess State-wide significance. A reasonable goal is about 10 acres per 1,000 people in the county.

For the 16 most heavily populated counties in the State, in which populations in 1970 will probably exceed 40,000, the goal for that year is about 25,000 acres distributed as shown in the table.

Since about two-thirds of the vital need is in the metropolitan Twin Cities area, and since much of the best potential recreational land may lie in such nearby but less heavily populated counties as Chisago and Carver, multi-county co-operation is needed. Counties providing heavy demands should assist others providing desirable supplies to establish open space for public use.

At an estimated average cost of $500 per acre for the metropolitan counties of Anoka, Dakota, Hennepin, Ramsey and Washington and of $200 per acre for the remaining counties in the table, the total cost would approximate $10 million.

The Outdoor Recreation Resources Review Commission has recommended that "states should take the lead in working with local governments toward a balanced state-local outdoor recreation program". Assistance to counties and municipalities through funds provided on some kind of matching basis until established goals are reached and through technical and professional assistance in planning, needs to be authorized by the Legislature.

Municipal Lands

Eighteen municipalities in Minnesota had attained populations of 20,000 or more in 1960.

At the accepted ratio of 10 acres of open land per 1,000 population, these eighteen municipalities by 1970 will need to acquire 3,500 acres beyond their present holdings for this purpose. At an estimated cost of $1,000 per acre, the total cost will approximate $3½ million.

In urban areas flood plains, which should be removed from development, often have great potential for recreational use. Zoning should prohibit new construction in such areas, with the ultimate objective of dedicating these to recreational use.

Private Lands

Public acquisition is not the only solution to Minnesota's recreational land needs, although it is an indispensable part. Private lands can play a significant role, as is already true of some industrial lands in the State.

Methods such as tax concessions, easements, leases and other techniques must be explored to further expand private participation.

An important element in the privately-owned recreational land picture in Minnesota is the resort industry. Increased effort on the part of the State to assist this industry in attracting tourists would be helpful.

RECREATION LAND NEEDS OF MINNESOTA COUNTIES AND MUNICIPALITIES

Population and recreational land need data for larger Minnesota counties and municipalities. All counties in which 1970 populations are predicted to exceed 40,000 and all municipalities where 1960 populations exceed 20,000 are included.

		POPULATION		PARKS					
COUNTY	MUNICIPALITY	1960	1970 (est.)	Number (1962)	Acreage (1962)	1970 needs (1 acre/100 people)	Percent of 1970 need now acquired	County acreage to be acquired by 1970	Municipal acreage to be acquired by 1970
Anoka		85,916	125,000	0	0	1,250	0	1,250	
Blue Earth		44,385	51,000	0	0	510	0	510	
	Mankato	23,797	30,500	22	224	305	73½		81
Clay		39,080	48,000	0	0	480	0	480	
	Moorhead	22,934	31,100	14	86	311	27½		225
Dakota		78,303	105,000	0	0	1,050	0	1,050	
	So. St. Paul	22,032	33,200	13	121	332	36½		211
Freeborn		37,891	42,000	0	0	420	0	420	
Hennepin		842,854	1,003,000	5	900	10,030	14	9,130	
	Bloomington	50,498	Total for 8 Hennepin Co. municipalities	53	849	Total for 8 municipalities			Total for 8 municipalities
	Brooklyn Center	24,356		12	289				
	Crystal	24,283		19	106				
	Edina	28,501		22	747				
	Minneapolis	482,872		152	5,533				
	Minnetonka	25,037		2	35				
	Richfield	42,523		21	376				
	St. Louis Park	43,310		35	350				
			861,000			8,610			650
Itasca		38,006	43,500	0	0	435	0	435	
Mower		48,498	55,000	0	0	550	0	550	
	Austin	27,908	34,400	24	177	344	51½		167
Olmsted		65,532	85,000	0	0	850	0	850	
	Rochester	40,663	60,100	35	941	601	156		0
Otter Tail		48,960	47,850	0	0	478	0	478	
Ramsey		422,525	489,000	15	550	4,890	11	4,340	
	Roseville	23,997	391,100	13	80	3,911			1,948
	St. Paul	313,411		91	1,883				
Rice		38,988	42,500	0	0	425	0	425	
St. Louis		231,588	250,000	1	3	2,500	1	2,497	
	Duluth	106,884	118,300	54	3,793	1,183	320		0
Stearns		80,345	90,000	0	0	900	0	900	
	St. Cloud	33,815	44,800	35	246	448	55		202
Washington		52,432	74,000	0	0	740	0	740	
Winona		40,957	43,300	1	27	433	6	406	
	Winona	24,895	27,300	30	2,145	273	787		0
16 Counties		2,196,260	2,594,150	669	19,461*	42,259		24,461*	
	18 Municipalities	1,361,716	1,631,800						3,484*

*Present acreage, county acreage to be acquired, and municipal acreage to be acquired add to a greater total than the 1970 needs because some municipalities now have more than 1 acre of park land per 100 people.

WATER ACCESS

Wanted: More Sites

From the standpoint of its recreational water resource, Minnesota is the most richly endowed State in the U.S. It has more than 5,000 inland lakes over 40 acres in size, more than 14,000 bodies of water larger than 10 acres, and about 100,000 wild fowl-producing potholes.

In addition, Minnesota has about 25,000 miles of rivers and streams and 190 miles of rugged coastline along the North Shore of Lake Superior. The incomparable canoe country in the Superior National Forest is one of the country's few true wilderness areas east of the Rockies.

The Outdoor Recreation Resources Review Commission states as one of its major findings that "Water is a focal point of outdoor recreation. . . . Swimming is now one of the most popular outdoor activities and is likely to be the most popular of all by the turn of the century. Boating and fishing are among the top ten activities. Camping, picnicking and hiking, also high on the list, are more attractive near water sites." 44% of the American people prefer water-based recreation activities to any others.

40 years to get to the lake?

Fewer than 1,000 lake shore sites in Minnesota are now publicly accessible by automobile. If the 2½ million acres of lakes over 320 acres in size are to be made accessible to the public generally, and if we accept the guideline laid down by the Sport Fishing Institute (one public access site per 300 acres of water), Minnesota must provide on these larger lakes 8,660 access sites. This does not include any of the 10,000 smaller lakes, to some of which public access is highly desirable.

The Division of Game and Fish has established a conservative goal of 5,000 access sites. At the present rate of acquisition, about 40 years will be required to attain this goal.

Acquisition

The Department of Conservation is now authorized to acquire public access up to five acres in size and up to $1,000 in cost on meandered lakes exceeding 150 acres in size. Funds are provided using one-third of the unclaimed refundable taxes on gasoline for boats, amounting to about $150,000 annually. The highest rate of acquisition for any year thus far has been 62 sites, although it is predicted that this year about 100 will be acquired.

The rate of acquisition should be accelerated to about 600 sites annually, thus permitting completion of the established goal by 1970.

Since many of these sites will be utilized primarily by local residents, the participation of local governments should be and is being encouraged. Municipal, township or county governments should undertake maintenance in circumstances where local use is heavy. Where this is not true, the State should make provision for maintenance. A number of counties already are providing land for this purpose. Others should dedicate suitable county lands while it is still possible. Access is particularly critical in the metropolitan area of the Twin Cities.

The current authorization should be amended to provide for the acquisition of access sites on all public waters, and should not be limited to meandered lakes.

Experience in Michigan, where an access program is well developed, indicates that the five-acre limitation is far too small. The $1,000 maximum expenditure per site is also in need of upward revision, particularly if the maximum size is increased. Greater discretionary power on these matters should be delegated to the Commissioner of Conservation.

The cost of the program for acquiring and developing the needed sites would be about $1 million annually over a seven-year period.

FINANCING

Funds Needed

Lack of adequate funds for outdoor recreation is a serious problem. Until recently, as in other states, Minnesota's public agencies have found park and recreation appropriations among the last to be considered and among the first to be pared down. Happily, the trend appears to be changing.

The Baptism: 25,000 miles of streams

The proposed program of planning, recreational land acquisition and research cannot be postponed in view of the tremendously increasing demand and the opportunity Minnesota has to increase its tourist attractions and to provide its own citizens full opportunity to enjoy its resources. Other states have taken action. New York has a $75 million program, Pennsylvania's is $70 million, New Jersey's is $60 million, Wisconsin's is $50 million and Michigan's is $10 million. Minnesota must keep pace or sacrifice much of the potential in its unsurpassed lakes, its forests, its wildlife and its other recreational attractions.

Bond Issue

In recognition of the fact that current taxes and user fees cannot be expected to provide enough revenue to undertake research and planning, and to acquire and develop recreational lands on the scale required, the Council recommends a general obligation bond issue in the amount of $20 million to provide the needed capital, and to be allocated as follows:

- $1 million toward the development of a research program for Minnesota in the field of outdoor recreation.
- $500,000 for the preparation of a State-wide plan for outdoor recreational development.
- $3¾ million for the acquisition of new State park lands and canoe campsites.
- $1 million toward the purchase of the Minnesota Memorial Hardwood Forest.
- $5 million to counties on a matching basis for the acquisition of county recreational lands.

▶ $1¾ million to municipalities on a matching basis for the acquisition of municipal open space.

▶ $7 million for the acquisition and development of public access to the lakes and streams of Minnesota.

From the standpoint of public economy, postponement is expensive. With land values rising at about 10% annually, a bond issue carrying an interest rate of about one-half the 10% is a very good investment.

User Fees

It is also the opinion of the Council that those who use facilities exclusively or those who use specialized facilities in the pursuit of outdoor recreation should be charged fees adequate to cover a reasonable portion of the cost of administration, operation and maintenance of such facilities. This should not preclude the recovery of all or part of the capital investment when this is possible with reasonable fees.

On the other hand, user charges should not curtail the possible use of public recreational lands for hiking, sightseeing, photography, nature walks and similar activities. These should be provided at a nominal cost or without charge. The capital investments for such uses, therefore, must be made from general revenue funds which should, in part, retire the recommended bond issue.

Since uniformity of fees among states is desirable, the proposed increases in fees should be explored with neighboring states before unilateral action is taken. It is not unreasonable to assume that Wisconsin and Michigan will agree to the increase in campers' fees. The fee increase also should stimulate provision of similar camping services by private operators who will not be faced by such a large differential in charges as that presently existing.

It is assumed that Federal grants-in-aid in accordance with the recommendations of the National Outdoor Recreation Resources Review Commission will be forthcoming. This would reduce, in some degree, costs to the State. Such legislation with respect to State-wide planning has already been proposed.

In the Council's recommendations concerned with recreational lands, the significance of private lands in meeting a part of the need is stressed. In some situations, the long-run interest of the public may be well served by the acquisition of scenic easements or by other less costly methods than that of outright purchase. However, it is important that such arrangements be adequately assured in perpetuity, at least for many recreational purposes.

The necessary action should be taken to increase charges against those who use Minnesota's outdoor recreational resources as follows:

▶ Boat registration fees should be raised from $1.50 to $3.00 per boat per biennium. This would provide an added income of between $150,000 and $200,000 annually.

▶ Campers' fees on primitive State forest campgrounds should be established at $1.00 per night and on modern State park campgrounds at $1.50 per night. This will provide an added income of about $35,000 annually.

▶ All marine gas taxes should be retained by the State for recreational resource development. This will provide an added annual income of about $60,000.

▶ A $1.00 surtax on drivers' licenses should be imposed to provide about $475,000 annually.

The estimated increased annual income from these sources totals $745,000.

Itasca vista: the user should pay

GAME & FISH

PROSPECTS

Increasing Pressures

The years ahead hold serious problems for conservation. The upward trend in available leisure time combined with our increasing population and improved mobility are bringing ever-increasing pressures on game and fish. We must substantially increase our efforts now to offset the declining trend in available wildlife habitat in Minnesota if hunting and fishing, with some modest chance for success, are to be continued as a form of outdoor recreation.

Ways and means must be found to increase the carrying capacity of publicly owned habitat. Educational assistance must be given private landholders to encourage them to preserve and increase wildlife habitat on their individual holdings. We must take immediate steps to prevent the draining of our all too few remaining wetlands. We must re-establish the possibility for successful reproduction for game and fish in many areas.

Public access to more of our lakes must be provided. Areas currently in public ownership must be retained in public ownership. Additional public shooting areas must be obtained and developed.

All of this will take money, and the money will be forthcoming only if we have the courage and the foresight now to initiate the plans that will insure the perpetuation of hunting and fishing for future generations.

Blue Wing Teal: no wetlands, no ducks

A PLACE TO HUNT AND FISH

Wildlife Habitat

An important part of our national heritage is our fundamental right to hunt and fish. Early explorers found game in abundance and lived off the land. The first settlers in Minnesota depended upon game and fish for a major part of their food. This dependence decreased with the settlement and development of our State and is all but gone today. But the urge to hunt and fish is as strong as ever and its value as recreation has grown.

Settlement and development brought with it the need to regulate hunting and fishing in the public interest. With regulation came the need for game and fish management, the enforcement of regulations and, finally, a positive program to preserve and improve habitat.

Along with this has come the responsibility of the Governor, the Legislature and the Department of Conservation to provide Minnesota citizens with not only a reasonable possibility for hunting and fishing success but also a place to hunt and fish.

Providing a place for hunting and fishing requires first of all that lands and waters that now produce game and fish be preserved. The preservation of adequate game- and fish-producing habitat can take place only when the private landowner develops a true respect for his land and accepts his responsibility for stewardship; through acquisition and public ownership; and with intelligent and aggressive action by the State to coordinate and direct in the public interest the many Federal and State programs which directly affect the wildlife resources of Minnesota.

WETLANDS

Public Value

Minnesota's wetlands offer its citizens high quality places to hunt. Acre for acre they are the areas of greatest wildlife production. As land values continue to rise, an inexorable pressure is maintained on these wetlands — to drain them for agricultural use or to fill them for urban, industrial, highway, or other purposes.

Wetlands have substantial public values. In all or some respects, they retard runoff, reduce stream erosion and siltation, furnish storage space for floodwaters, maintain underground water supplies, provide breeding grounds for waterfowl and spawning grounds for fish, furnish food and cover for upland game birds, big game and fur animals, and are sites for outdoor recreation.

With so many public values at stake, preservation of wetlands is essential.

Drainage

Minnesota's wetlands are being drained at the rate of between two and five percent each year. If this trend continues, the wetlands in western Minnesota will be largely gone by 1990. With them will go the best duck-producing habitat in the Nation; with them will also go fur animals, shorebirds, upland game birds and big game. With their loss we will inherit increased land erosion and stream siltation and fall heir to an increase in the duration and intensity of floods, lower ground-water tables and reduced outdoor recreation resources.

Over $4½ million in Federal subsidies were paid to Minnesota landowners to drain wetlands in the three years of 1958, 1959 and 1960. In addition, 18 of the first 26 U. S. Department of Agriculture Small Watershed Projects proposed in Minnesota have drainage as their primary activity. Efforts to eliminate or curtail Federal drainage subsidies and to redirect Small Watershed Projects to-

TASK FORCE

WESLEY LIBBEY, Chairman
ROBERT W. BURWELL
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wards more fundamental soil and water conservation objectives have failed.

The Governor and the Minnesota Legislature should memorialize the Congress of the United States to amend the Soil Conservation and Domestic Allotment Act of 1936, P.L. 461, 74th Congress, to prohibit Federal assistance for the drainage of wetlands that are of primary value to wildlife.

Acquisition

The Department of Conservation has an acquisition program under way to preserve some of Minnesota's remaining wetlands. The current goal of this program is 250,000 acres of wetlands in public ownership. It is presently financed entirely by the $1.00 surcharge on small game hunting licenses and Pittman-Robertson funds. Areas so acquired are open for public hunting and recreation. Acquisitions under this program now comprise some 407 units totaling 104,000 acres.

Wetland preservation is of Statewide interest and concern. It is a program that should be shared and financed by all of our citizens, not by sportsmen alone as is presently the case.

The sum of $300,000 should be appropriated by the Minnesota Legislature annually from general revenues to augment and hasten the present State-administered wetland acquisition program. Augmented by $300,000 annually, the goal of 250,000 acres of wetlands under State control can be reached by 1969.

Changes in Present Laws

The program for acquisition, development and preservation of wetlands will be strengthened by changes in the present laws.

Section 97.484 of the Game and Fish Laws, which provides for drainage assessments against State-owned wetlands, should be repealed.

Section 97.481 of the Game and Fish Laws should be amended by adding the following language: "No wildlife lands so acquired shall be drained, taken, damaged, or assessed in any drainage proceedings conducted under the Minnesota Drainage Code or otherwise except upon a determination by the Commissioner of Conservation that such lands will be benefited for the purpose for which they were acquired."

Section 1, Minnesota Statutes 1953, Section 106.661 should be amended to provide for the abandonment of *any part* of a *legal* ditch. The above existing law hinders acquisition and development.

Section 106.021, Subdivision 1, Minnesota Statutes 1957, should be amended by adding the following language: "Provided that the beds or channels of public waters may not be deepened, widened, straightened, or changed except by the written consent of the Commissioner of Conservation." Under Subdivisions 2 and 4, the Commissioner's authority should be broadened so that it will apply to all public waters.

DRAINAGE BIGGEST PROBLEM

Elimination of drainage and acquisition of wetlands are considered the two major problems affecting Minnesota's game and fish resources, according to a mail survey made by the Council as part of its study.

The questionnaire went to several hundred conservation clubs, State and Federal personnel and others interested in wildlife. All parts of the State were represented by the 50% response. There was little difference between the opinions of the public and those of professionals. There were many rather urgent comments: "Get rolling fast!"

Altogether, 18 distinct problem areas were mentioned. These are ranked below in order of importance, as determined by the average weighted score (the lower the score, the greater the importance):

Problem Area	Weighted Average Importance
1. Elimination of Drainage	3.39
2. Wetlands Acquisition	3.40
3. Increased Funds for Game and Fish	4.55
4. Improved Pollution Control	5.09
5. Expanded Research	5.22
6. Improved Forestry Practices	5.27
7. Public Access	5.35
8. Game Habitat and Management	5.61
9. Improved Land Use	5.67
10. Conservation Education	5.93
11. Fish Propagation and Management	5.94
12. Departmental Improvements	5.94
13. Game Seasons and Regulations	6.33
14. Fish Seasons and Regulations	6.48
15. Improved Law Enforcement	6.50
16. Recreation	6.66
17. Bounties	6.70
18. More Authority on Seasons and Limits	6.70

LAKES AND STREAMS

Fish Propagation

A place to hunt and fish means little unless the hunter or the angler can anticipate some reward for his efforts. Over the years, natural northern pike spawning areas have been greatly reduced. To preserve these important spawning grounds, the Division of Game and Fish has acquired or is in the process of acquiring 38 such areas, and has an additional 60 under protection by agreement with the property owners. About 250 largemouth bass spawning areas are given protection by the Division each year. The Division operates 40 State-owned drainable rearing ponds for the production of both walleye and northern pike. It operates about 100 natural rearing ponds for walleye production in cooperation with local sponsoring organizations.

The total fish production from these rearing facilities is about 50% below the annual useful need.

The Division's fish rescue and rough fish removal programs are now carried on on a far too modest scale. These exceedingly valuable programs should be greatly expanded.

The Division of Game and Fish should allocate more of its funds to fish spawning and rearing areas, fish rescue and rough fish removal work.

Access

A program to provide additional public access to our lakes and streams is also under way. The goal is access to 5,000 lakes and 5,000 miles of trout streams. Currently, access is possible to some 2,400 lakes and 700 miles of trout streams on publicly owned lands. Some 304 additional lake access sites have already been purchased or optioned, and easements have been obtained on about 300 miles of trout streams.

The Legislature should be asked to remove the $1,000 and 5-acre lake maximum and the 150-acre lake minimum that have proven to be unreasonable and restrictive limitations on the purchase of public access sites.

FOREST LANDS

Wildlife Management

There is an increasing need for developing and using methods and practices that will increase the production and availability of wildlife on forest lands.

An aftermath of early lumbering in Minnesota was a virtual explosion of whitetailed deer and ruffed grouse populations. Now our forests are again maturing. This is decreasing the potential habi-

tat for deer and grouse. Lack of markets for Minnesota's mature timber is accentuating the problem.

Increasing browse and other food plants by cutting and prescribed burning, and developing access roads into isolated areas offer means of increasing both wildlife population and harvest on forest lands.

Co-operation

Current co-operation between the Divisions of Forestry and of Game and Fish, which has resulted in, among other things, the joint construction of some 250 miles of access roads, is encouraging.

Existing forest lands in public ownership which hold little promise for timber production might well be devoted to intensive management for game and fish. Common access roads to serve logging, prescribed burning programs and recreation should be emphasized. Many acres of Minnesota's publicly owned forests offer virtually untapped opportunities for a place to hunt and fish.

The Commissioner of Conservation should require the Division of Forestry to integrate more closely its land use program with the objectives of the Division of Game and Fish in recognition of the fact that hunting and fishing are increasingly important forest products.

PRIVATE LANDS

Guidance

Not all hunting and fishing could or should take place on public lands. Too little attention has been paid by the Department of Conservation to its obligation to those who seek their hunting and fishing on private lands. Many Minnesotans have private investments that guarantee that they and their children will have a place to hunt and fish. Many of them would like to improve the wildlife or fish production on their lands. When sportsmen think enough of their sport to invest substantial sums of money in it, they should be offered guidance, assistance and encouragement so they may enjoy greater wildlife production on their lands and the improved hunting that goes with it.

An increased portion of the Game and Fish Division's budget should be directed towards guidance to private landowners.

The University of Minnesota and the Division of Game and Fish should work towards the establishment of a wildlife extension program.

DIVISION OF GAME AND FISH

Internal Matters

Minnesota is fortunate in having experienced professional leadership throughout the Division of Game and Fish. Many employees enjoy excellent national reputations. Staff losses, however, have been a serious problem.

Over the past eight years, the Division has lost about 35 of its personnel. Many of its best scientists and managers have resigned for higher paying positions with other states and with Federal agencies. Others are on the verge of leaving.

Game and fish management is a complex business. The numbers of hunters and fishermen have increased over the years, while the annual game and fish production of our lands and waters has gradually decreased. Thus the complexities have multiplied. Unfortunately, this dilemma has not as yet been countered with general understanding and adequate funds. Necessary general understanding is growing, however, and today adequate funds are not an impossibility.

The purpose of the Council is not to be critical. Rather, it proposes changes designed to attract and to hold good personnel, to inspire effort, and to reward excellence.

The Legislature should be asked to place the position of the Director of the Division of Game and Fish in the classified service and to make professional education and experience a necessary qualification. This is not a policy-making position, and lack of civil service status is an unnecessary and restrictive burden.

The Director of Game and Fish and the State Civil Service Commission should be authorized to —

Develop and institute higher position standards and entrance requirements for personnel in the Sections of Game, of Fisheries, of Research and Planning, and of Warden Service;

Establish salary rates commensurate with the revised positions and sufficient to attract and hold competent new personnel and make possible upgrading and advancement of present qualified personnel; and

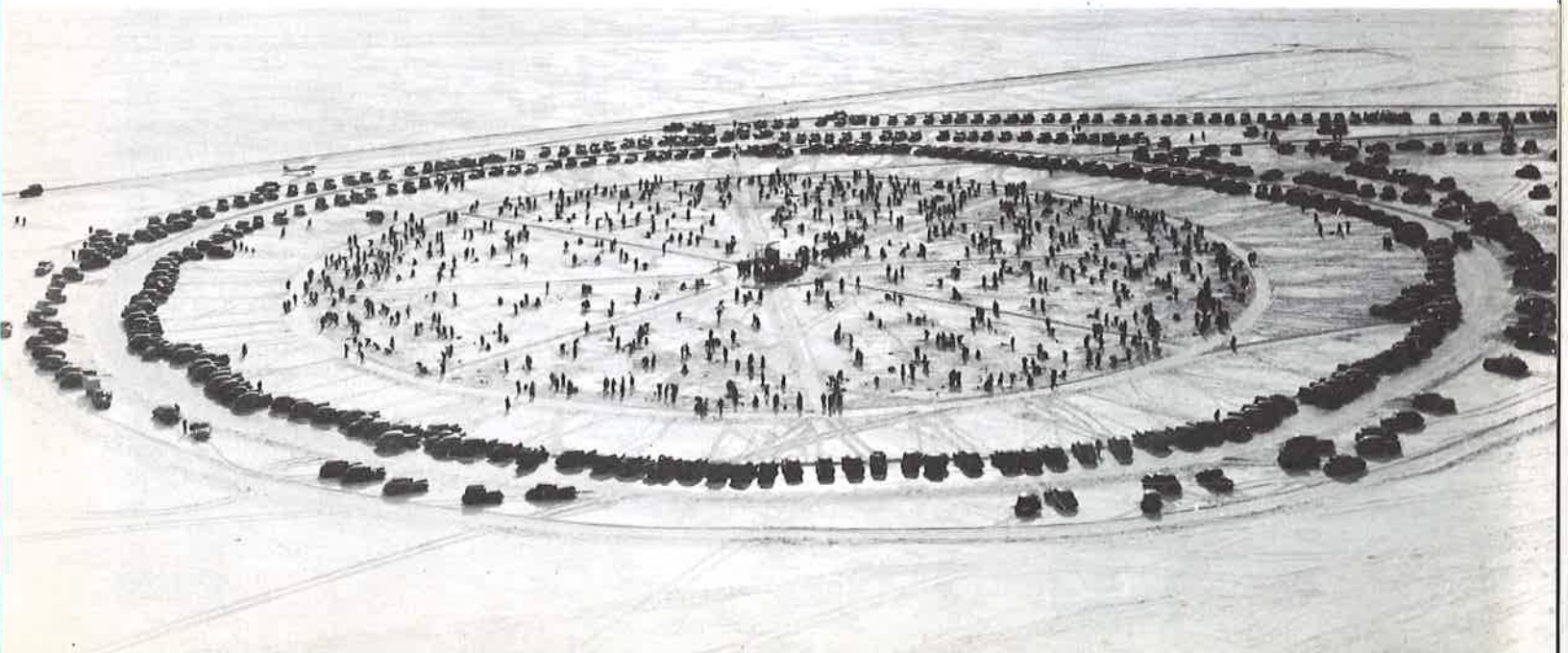
Develop a procedure for utilizing the present classification of Research Scientist.

The Division of Game and Fish should develop and institute plans to encourage staff development through —

Utilization on an individual basis of educational facilities at the University of Minnesota and other educational institutions; and

An in-service training program utilizing such facilities as the short courses in law enforcement conducted by the U. S. Treasury Department, the fisheries training facilities of the U. S. Department of the Interior, and the

Winter fishing derby at White Bear: the fish are falling behind



real estate appraisal courses offered by the American Institute of Realty Appraisers.

The Division of Game and Fish should divide the State into five regions, establish regional headquarters in each region, and consolidate and direct the field operations of the Sections of Game, of Fisheries, and of Warden Service through these headquarters.

The Division of Game and Fish should establish a "Wildlife Research Advisory Committee". The objectives of this committee would be to evaluate the research work under way, to counsel on research projects that should be undertaken, and to offer the assistance of scientists in other research fields. This committee would be advisory to the Director of the Division of Game and Fish, and would meet at least annually with him and his research staff. The committee membership should include not only competent scientists whose backgrounds deal with the biology of game and fish but also men from the fields of medicine, veterinary medicine, chemistry, geology, soil and similar fields. Progress in game and fish management is generally related directly to research. Capably directed, energetically pursued, research is the best investment we can make for the future of our game and fish resources.

The Division of Game and Fish should accelerate its program of assigning game wardens additional responsibilities in public relations, conservation education and game and fish management.

The Division of Game and Fish should develop and institute plans to improve the possibilities for individual advancement based upon qualification and experience throughout the entire Division.

SEASONS AND LIMITS

Who Should Decide?

The people of Minnesota look to their elected representatives to establish broad game and fish policies, to expedite the more important programs, to facilitate more effective management through wise legislation, and to provide the funds necessary to make possible an adequate game and fish program.

Managing game and fish is not a static business. The fortunes of game and fish over the State ebb and flow depending on a great variety of factors, many of which arise from the phenomena of nature. Management of these game and fish resources must of necessity be vested by the Legislature in an operating agency – in Minnesota, the Division of Game and Fish.

This management is exercised on an annual basis, for wildlife is an annual crop. However, the authority of the Commissioner of Conservation is now limited in some instances, and this reduces the potential effectiveness of the Division of Game and Fish.

Delegated Authority

No one has a greater stake in the welfare and conservation of the State's game and fish resources than does the Commissioner of Conservation, the Director of the Division of Game and Fish, and their staffs. No one is better equipped to handle this administrative responsibility.

The Legislature should delegate to the Commissioner of Conservation full authority to set all seasons and bag limits of Minnesota's game and fish, thus charging the Division with responsible leadership.

CONSERVATION EDUCATION

Informing the Public

Adequate public knowledge is basic to the acceptance and support of all broad public programs. Minnesota citizens are not well-informed on fundamental game and fish problems and needs.

Although leaders in both conservation and education have long recognized the need for making conservation education a fundamental part of our State educational program, little has been accomplished to date. Recommendations that conservation be integrated into the curriculum on all levels of instruction have largely been ignored.

The great majority of preparatory teachers still graduate and are certified to teach with little opportunity to understand the principles of conservation. Textbooks and reference materials on conservation are, from a practical viewpoint, not available.

The news media, generally, have not been furnished with enough of the kind of stories and articles that will enable them to substantially assist in educating the public on conservation needs and problems.

Information and education services offered by the Department of Conservation have been minimized by lack of funds. The excellent State magazine "The Conservation Volunteer" is extremely limited as to number of issues per year and circulation.

The Commissioner of Education should place more emphasis on the integration of conservation education into school curricula.

The news media should be asked to employ more writers who have a fundamental background in conservation.

The Legislature should be asked to furnish more adequate funds to the Bureau of Information of the Department of Conservation.

All possible assistance should be given to the Division of Game and Fish for the rapid expansion of the recently developed and just initiated youth conservation education project, "The Conservation Volunteer."

FINANCES

Special Projects

There is a growing tendency on the part of the Legislature to pass laws requiring the construction of specific projects with Game and Fish funds. Most such projects approved at the last session were of limited local value.

Proposed projects should be brought to the Commissioner of Conservation well in advance of legislative sessions. This will give the Department ample time to study and determine the feasibility and priority of such projects. If the project has merit and if it supports or complements the State's goals for sustained game and fish production, it then will be in the interest of the State as a whole and be included in the recommended departmental budget.

Legislative Transfers

Biennial legislative transfers from Game and Fish funds authorized during the last session were:

Department of Administration	$ 84,000
Conservation Administration	813,084
Department of Public Health	100,000
Division of Forestry	80,000
Bounties	280,000
Total	$1,357,084

The total income of the Division of Game and Fish comes from hunters and fishermen. This income should be spent only for those activities which support hunting and fishing.

The $84,000 transferred to the Department of Administration represents charges for services rendered compiled through a cost accrual accounting system, and are justified.

The $813,084 transferred to the Department of Conservation for administration appears to be an arbitrary amount. The Division of Game and Fish should pay its proper share of administrative costs based upon services furnished. But it should pay no more than its fair share. This cost should be accurately determined through the use of cost accrual accounting methods.

The $100,000 transferred to the Department of Public Health and the

$80,000 transferred to the Division of Forestry do not appear to be justified, and should be discontinued.

Currently bounty payments of $280,000 are made biennially from Game and Fish funds. It is well established that bounties are of no value in controlling those predators which have a material influence on game and fish resources. Accordingly, there is no justification for spending Game and Fish funds for the payment of bounties. Selective predator control where it is carried on in specific areas and for specific purposes can be of value to agriculture. The cost of selective predator control should be borne by the beneficiaries.

The Department of Conservation should institute a cost accrual accounting system, and charge the Division of Game and Fish only for services rendered.

The Legislature should discontinue the transfer of Game and Fish funds to the Department of Public Health and to the Division of Forestry.

The Legislature should discontinue the spending of Game and Fish funds for the payment of bounties.

Additional Revenues

Good organization, skillful leadership, dedicated personnel and progressive planning are wasted unless supported by adequate funds.

Changes and problems that affect the future of hunting and fishing do not normally take place or become apparent at once. They develop gradually over long periods of time. The best preparation that we can make for the future is to furnish adequate funds *now*.

During the last legislative session, the fee for resident fishing licenses was increased – the first such increase in over 10 years. Several other increases and a change in the method of paying county auditors and sales agents are now advisable.

The Legislature should increase the following license fees:

Resident Deer License from $3.50 to $5.00.

Resident Small Game License from $2.00 to $3.00 (not including the present temporary wetlands surcharge of $1.00).

Fish House and Dark House License from $1.00 to $2.00.

The Legislature should add a Trout Stamp (other than Lake Trout) at $2.00.

The Legislature should add an issuance fee of 25¢ on all licenses, such fee to go to county auditors and their agents in lieu of the 10% commission which is then to be abolished.

The adoption of these recommendations will provide the Division of Game and Fish with additional income estimated as follows:

	Anticipated Increase Per Year
Resident Deer License to $5.00	$ 300,000
Resident Small Game License to $3.00	300,000
Fish House and Dark House License to $2.00	50,000
Trout Stamp at $2.00	50,000
Savings from changing 10% commission to 25¢ issuance fee	400,000
Total annual increase in income	$1,100,000
TOTAL INCREASE PER BIENNIUM	$2,200,000

Allocations

Consistent with the findings and recommendations made in the foregoing sections of this report, a substantial portion of this increase should be budgeted to the following activities of the Division of Game and Fish: expanded fish rearing facilities, expanded fish rescue and rough fish removal operations, improved services to private landowners, improved salaries for Division personnel, an education and in-service training program for Division personnel, consolidation of regional offices, an expanded conservation education program, and the filling of approximately 35 positions lost over the past eight years.

Appropriations

Estimates of the income of the Game and Fish Fund for the 1963-65 Biennium and funds available for appropriation by the Legislature are as follows:

Game and Fish fund estimated balance on 7-1-63	$ 400,000
Anticipated Receipts 7-1-63 through 6-30-65 at present license fees	11,330,000
Anticipated Additional Income from requested license fee increases	2,200,000
Total Estimated Income 1963-1965	$13,930,000
Plus estimated pickup of 2% covering appropriation cancellations	250,000
	$14,180,000
Less Desired Fund Balance on 6-30-65	–500,000
FUNDS AVAILABLE – 1963-65 BIENNIUM	$13,680,000

The Legislature should approve appropriations to the Division of Game and Fish from Game and Fish funds approximating in total $13,700,000 for the 1963-1965 Biennium, such appropriations to exclude legislative transfers of Game and Fish funds except those to the Department of Administration and to the Department of Conservation for administration.

Native Minnesotan: burning is prescribed

LAND

Minnesota Land-use Patterns

	ACRES
Total land area	51,205,760
Land in farms (145,660 farms; average size: 211 acres; 20,000 fewer farms than in 1954; average increase: 16 acres)	30,734,260
Cropland (Cultivated acres, rotation pasture, tame hay)	22,004,170
Permanent pasture (Used principally for grazing)	3,837,360
Forest and woodland	19,335,946
Idle and other (Mostly marsh and wildlife lands)	3,788,451
Urban and industrial (Urban areas, farmsteads, industrial sites and built-up areas)	2,239,933

TAX-FORFEITED PROPERTY

Titles

The greatest stumbling block related to tax-forfeited land is the inadequacy of the title. At present the title acquired by the State through forfeiture for non-payment of taxes is merely a tax title. It is not acceptable to lending agencies as security for loans nor is it acceptable to the State or Federal Governments in exchange for their lands. The greatest area of vulnerability to successful attack seems to be that of personal service of the notice of expiration of the period of redemption.

Occupied Lands

The law requires that personal service must be made on the occupants of the tax-delinquent land about to be forfeited. The burden of determining whether or not a parcel of such land is occupied falls upon the sheriff whose duty it is to serve the notice. He must be sure that he knows boundaries of the tax-delinquent lands. In many instances the services of a land surveyor is required. The sheriff must also carefully examine the entire tract of land for evidence of occupancy, and service must be made on all occupants.

In the case of unoccupied lands, no personal service on the owner is required. The county auditor must post a notice and the list of lands in his office, and cause this notice to be published in the official newspaper of the county, calling attention to the notice of expiration of redemption and a list of the lands about to be forfeited posted in the county auditor's office.

It is suggested that the law provide for publication of the complete list of lands and the names of owners as they appear on the tax rolls, the same as contained in the list required to be posted in the county auditor's office. This would give property owners much more adequate notice than the publication now required. The requirement for personal service on the occupants of the tax-delinquent land should be eliminated, and only the service by publication of the complete list of lands and owners should be required.

Such a change in the law would remedy the situation where lands are forfeited after the passage of the law.

Time Limits

The most logical approach to the title of lands already forfeited would be a law setting a time limit to bring action to void the forfeiture for any reason except where the land is tax-exempt or where the taxes have been paid.

Such a bill has been repeatedly proposed to the Legislature by the Forest Region Rehabilitation Committee of the eighteen counties of Northeastern Minnesota, but with no success.

Appraisals

Whether the tax-forfeited land is to be sold to private owners or kept in public ownership, it is desirable to have detailed information about the property. Accurate appraisals for sales require such information. The decision to sell or retain in public ownership hinges on such knowledge. To sell without sound appraisals or to retain in public ownership without sound reason based on accurate knowledge of the property can hardly be considered in the public interest.

There are two other trouble areas in some counties. One is mineral interests, the other is divided interests. The problems originate in the area of taxation but are projected into the tax-forfeited land situations.

Mineral Interests

Mineral interests are considered real estate and may be owned separately from the surfaces of the land. As such, they are taxable as real estate under the ad valorem tax law. The problem arises in placing a value on the minerals. Where information as to quantity and quality is lacking no accurate values can be determined for tax purposes. Various devices have been proposed in the Legislature to solve this problem, but so far they have met with no success. The approach will need to be made in some manner other than through the ad valorem tax system.

This problem enters into the tax-forfeited land picture. The courts have held that if the surface and the minerals are consolidated in one owner on May 1 (the date set by law for valuing property for tax purposes), the value placed on the land is considered to be against both surface and minerals, even though there is no separate figure identified as mineral value. Any forfeiture based on non-payment of the tax based on this value is considered to be applied to both the surface and the minerals.

If the ownership of the minerals is severed from the ownership of the surface on the assessment date of May 1, the value placed on the land is considered to be against the surface only. Unless there is a separate value on the minerals they are considered omitted from taxation. As a result, any forfeiture based on non-payment of the taxes on such value is effected against the surface only.

Divided Interests

Taxation and forfeiture of divided interests pose an equally vexing problem. The law provides that an owner of a divided interest in real estate may pay the taxes on his fractional interest only, without regard to the payment of the other fractional interests. Continuity of title to such divided interest must be known to the county auditor and to the county treasurer if tax payments are to be properly credited to the particular interest. In the process of passage of title from deceased persons to their heirs, these divided ownerships can multiply like cells.

In a business partnership each partner is responsible for the debts of the partnership. Why not apply this same concept to the owners of divided interests? Any tax delinquency would be a lien against all the interests in the land and any forfeiture based on that unpaid tax would be effected against the entire tract.

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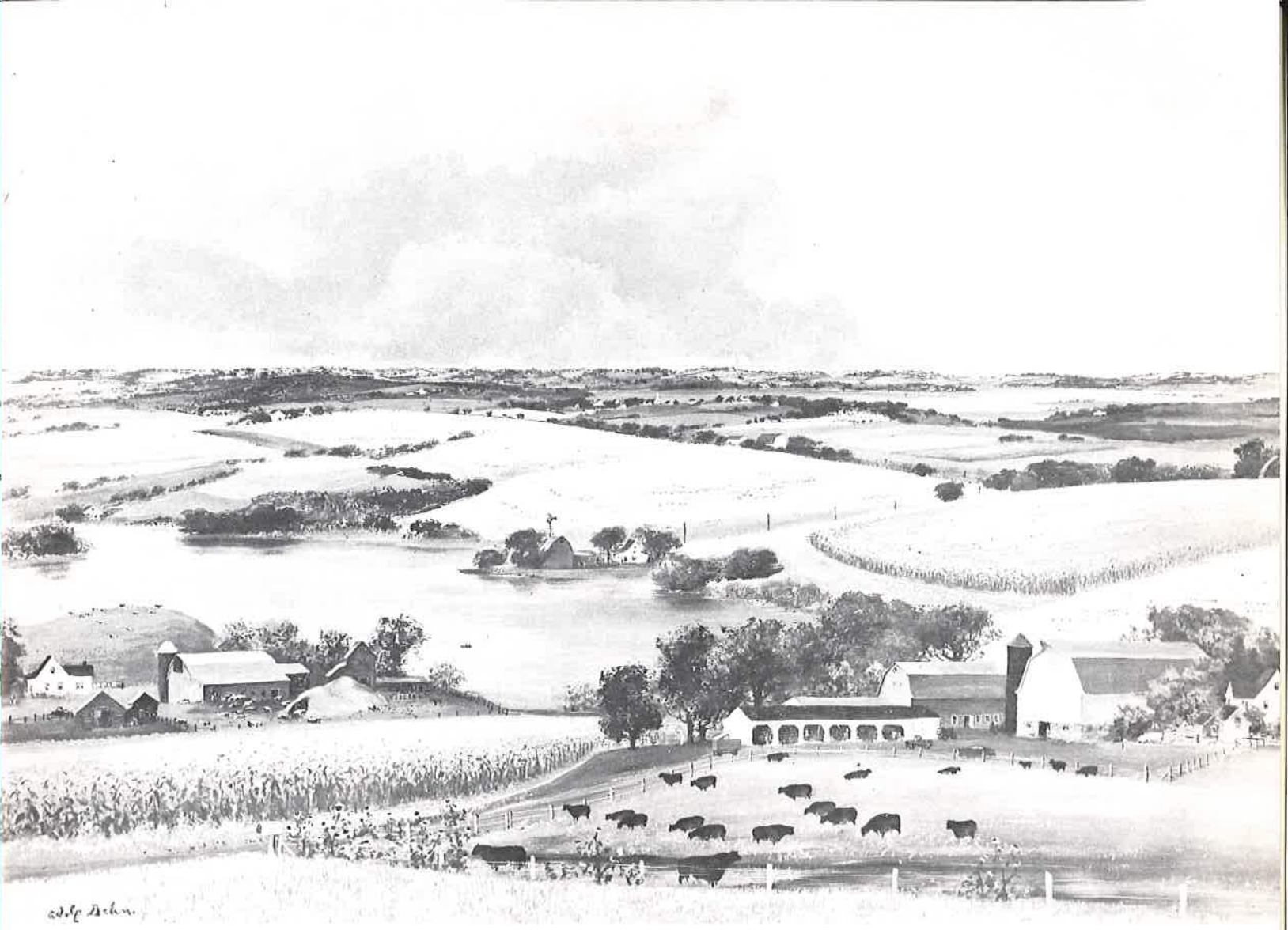
SOIL

The Basis of Production

Minnesota's 1½ billion-dollar agricultural enterprise, representing cash farm receipts from some 145,000 farms, in each of the last two years, is built on the productive capacity of the soil and the



"Summer Afternoon in Carver County" by Adolf Dehn: $1½ billion a year

agronomic and horticultural crops, forest products and livestock grown from the soil. Understanding, efficiently using, conserving and sustaining soil resources is thus basic to the welfare of not only the farmer but also the urban dweller. It is desirable to take inventory periodically of this facet of Minnesota's important resource to better plan for the future.

Soil Surveys

Minnesota is one of the top five or six farm states of the Nation. There are some soils that are not so good for agriculture or forest production, but excellent for wildlife habitat and recreational uses. There is a wide choice of land-use enterprise activities. Minnesota needs to push forward the soil survey, or soil resource inventory, and a soil research program to provide not only basic research factors about soils, but information vital to the future well-being of Minnesota's agricultural enterprise system and the Nation's stockpile of food and fibre.

A survey of the soil considers the soil texture and structure, as well as organic matter content that influences the supply of available soil moisture and drainage characteristics. The mineral makeup and content of lime influence soil fertility levels and thus the nature and productiveness of the crops or forest tree species which can be grown. The stoniness of the surface soil may limit land-use by cost of removal and difficulty of cultivation. Topography is also important, as it influences use of machinery, the erosion hazard and the areas of cultivated vs. non-cultivated land.

Minnesota presents a greater diversity of "Great Soil Groups" and major soil associations than any of the non-mountainous states. It has many dark-colored, high organic-matter soils developed under prairie vegetation and light-colored, low organic-matter soils developed under forest vegetation.

In a soil survey, the soils are examined in many locations. Each horizon is examined for color, soil structure, texture porosity, consistence, and content of organic matter, roots, gravel and stone. Soil pH, lime content and soluble salts are determined by chemical test. Drainage characteristics, engineering properties, relief and inter-relations of soils and vegetation are studied. Land-use capability evaluations are recorded.

Soil surveys are generally lacking for much of Minnesota. The soil surveys are made cooperatively by the Institute of Agriculture, the Soil Conservation Committee of the U. S. Department of Agriculture and the State Soil Conservation Service. Other Federal and State agencies like the U. S. Forest Service and the State Highway Department also cooperate in the program.

The present rate of field mapping in Minnesota approximates a million acres a year. Roughly 15 million acres have been mapped to date. This is about 29% of the land area of 51.2 million acres. Acceptable soil survey reports and soil maps, mostly published within the past ten years, are available for the following 17 counties: Crow Wing, Dakota, Dodge, Faribault, Fillmore, Isanti, Le-Sueur, McLeod, Mower, Nicollet, Scott, Sherburne, Wabasha, Waseca, Washington, Winona and Wright. An intensified soil survey program is obviously needed.

TRENDS IN FARM POPULATION AND SIZE OF FARMS

By O. B. JESNESS

Half a century ago, back in 1910, some 32 million people of a total of around 92 million in the United States lived on farms. The farm population then was more than one-third of the total. Last year the number on farms was estimated at 14.8 million, or 8 per cent of the 186 million total. In these five decades the farm population has declined by more than one-half while the total has doubled.

Anyone disposed to deplore this migration from farms might well ponder over what our nation would have been today without such a shift. For example, had the flow from farms been halted in 1910, the farm population today would have been over 60 million instead of under 15 million. More than four times as many farmers would be dividing a smaller farm income than we have today. Industrial development would have been very limited and the United States would have been one of the underdeveloped nations. It is frightening to contemplate what the outcome of World War II might have been under such circumstances.

The number of farms likewise has shown a down trend. In 1910, there were 6.3 million farms; in 1935, the Census reported 6.8 million, while for 1959 it gave a figure of 3.7 million. Part of the decline was occasioned by changes in census definitions, but of the one million drop in the five years, 1954-59, about 800,000 was a decline in numbers.

Some alarmists conclude that this proves that farmers are being driven off the land by low prices and incomes, and that farms are being abandoned. Were the former the case it would be reflected in extensive mortgage foreclosures and debt distress. This is not the situation today. In fact, land prices continue to edge upward. Were farms being abandoned the results would show up in a decided reduction in land in farms. This is not the case.

What is happening is that farms are being consolidated into larger units. Does this mean that "family farms" are being swallowed up by large corporation farms? Were that happening we would soon see an increase in hired labor on farms. Instead, the number of hired workers continues to decrease. The consolidation is into larger family units. Corporation farms remain the rare exception.

Gains in farm technology, mechanization and productivity are back of farm consolidation. If the labor used on farms in 1947-49 is represented by 100, the index for 1960 was down to 62. Output in 1960 was 126 compared with 100 for 1947-49. In short, farmers reduced manpower during this recent period by fully one-third while increasing output by better than one-fourth. The efficient farmer of today with modern machinery and technology can handle more land with his own and his family labor than his father could, even with the help of more hired labor. With practically all of the good land suitable for agriculture in farms consolidation of existing units is the only avenue left for enlarging acreage in a given farm. This is not to overlook the fact that farms generally are in effect increasing the land available to them by getting a greater output from their existing acres by using more fertilizer, improved crop varieties, pest controls and better management. This is well illustrated by the larger output coming from the same or smaller acreage.

Consolidation may involve combining two farms or by adding land from one farm to two or more nearby farms. This process not only helps more farmers to get farms of economic size but also is an aid in reducing the number of farmers and increasing the returns to the operators of the enlarged units. However, surpluses are not reduced thereby for the land remains in use. In fact, production may increase as a result of better management and operation.

Consolidation of farms into larger units is deplored by some on the grounds that it results in few opportunities for farm youth who want to become owner operators. They may also express regrets over the increased capital requirements which the larger units and rising land prices involve. There is no disputing the fact that larger units and higher land prices add to capital needs. The conclusions sometimes drawn, however, are open to question.

Modern farming produces more with less manpower. Only a small minority of the boys growing up on farms can look forward to becoming established as owner operators on adequate commercial farms. Will not they and the public generally gain from their entry into lines of economic activity where there is need for them and where there are better opportunities?

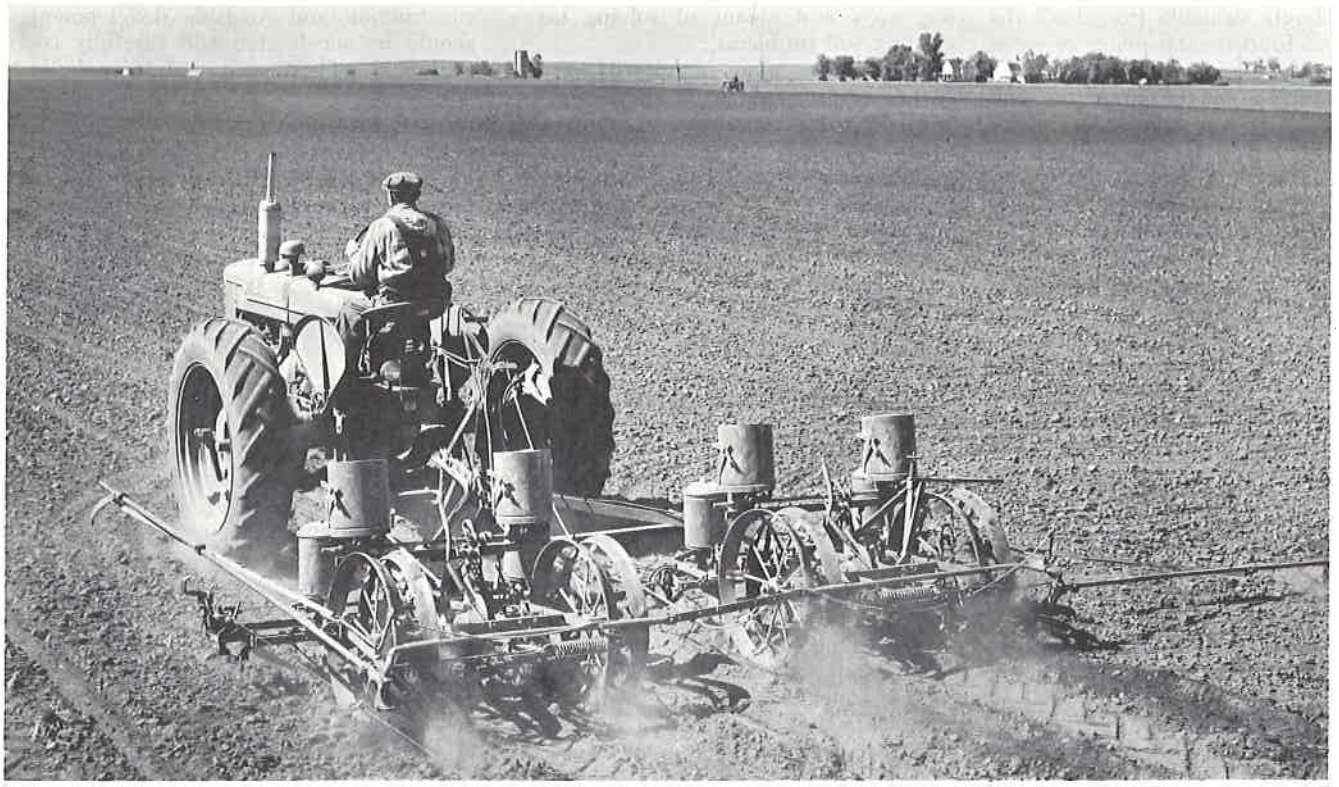
If farms are held below their optimum size, earnings will be lowered. Limiting opportunities in farming by reducing the scale of the business would be a sure way of driving the more enterprising and efficient elsewhere, leaving incompetents on the farm. Modern farming is a complex business and success calls for a high level of ability. Certainly, let us help the future farmers acquire the best training and preparation for that business. But let us also provide the best possible preparation for the majority who are headed for other lines.

The capital requirements in modern farming should not be used as an excuse for starting young farmers on uneconomic units. Their lower earnings under those conditions will make it more difficult to succeed with the smaller financial needs than with the larger. Every prospective farm owner needs an equity of his own. That is true of any business which calls for sizeable investment. While more capital is required farmers have access to more sources of credit, better adapted to their needs. The farm should be an adequate unit, priced in line with its prospective net earnings. The machinery and livestock should pay their way. Debt is not necessarily a burden. That which earns more than it costs is a source of income.

THE "AVERAGE" FARM INCOME

Comparisons of incomes of farmers with those of nonfarmers frequently are made. The usual measure of farm income employed in such comparisons is the average per capita farm income of farm people. This average is misleading. One reason for this is that such an average does not give adequate recognition to the rather wide income range found among farm people. Another reason is that it does not include income to farmers from nonfarm sources. The importance of the latter is indicated when one notes that with an estimated net national income from farming of $12.7 billion in 1961, the income to farmers from other sources is estimated at between six and seven billion dollars. In neither case is the income distributed uniformly among farmers.

The United States Census reported a total of 3.7 mil-



Down on the farm: more production, less manpower

lion farms in 1959. Of these, 21.4 percent had sales of farm products during the year of $10,000 and over while 17.7 percent had sales of $5,000 to $9,999. These two groups provided 87 percent of the sales. These are the commercial farms which receive the major share of the farm income. Their average income would at least double that of the overall figure. On the other extreme are 44 percent of the farms with sales of less than $2,500. These 1.6 million farms in 1959 included 882,000 part-time farms and 404,000 farms, sometimes referred to as part-retirement farms because their operators are 65 years or older. The part-time farmers receive the major share of their incomes from nonfarm sources. The part-time and the part-retirement farms accounted for only 4 percent of the sales so their share in the farm income is very small.

An indication of the range in farm incomes in Minnesota is found by grouping farms according to sales as has been done in the Upper Midwest Economic Study. Of the 158,000 farms in Minnesota in 1959, commercial farms (sales of $2,500 or more) numbered 118,478 and non-commercial 39,522. Of the commercial farms 40,877 had sales of $10,000 or more, and 77,601 had sales of $2,500 to $9,999.

Changes in farm land prices are not without importance in the farm income picture, at least over a period of time. The trend in farm land prices has been upward much of the time for many decades. The longest and most severe fall in farm land prices came in the period from 1920 to the early 1930's as an aftermath of World War I and its speculative boom in farm lands and the serious depression of the thirties. Many farmers heavily in debt found their equities wiped out by this fall and farm foreclosures were numerous. Emergency refinancing of farm debt was instituted to help alleviate the situation.

Farm land prices have risen decidedly in the last two decades. The number of farms on the market has been modest. Demand for those offered for sale often has been strong from nearby farmers desiring to enlarge their units for more effective use of modern technology and mechanization. Gains in farm productivity have been bid into higher land prices. Allotments in connection with government programs on some commodities have been capitalized into higher land prices. Purchases of farms as a hedge against inflation may have had some effect. Factors such as these account for increases in farm land during a period when farm incomes have been relatively low.

The rise in land prices may be viewed as "paper profits" and hence not as a part of farm income. However, this rise over time has played an important part in building of estates and providing retirement funds for a goodly number of farm people. It may also help explain why some have remained on the farm when they might have increased their current returns by shifting to some more remunerative line.

Migration of commercial farmers from agriculture with consolidation of farms into larger units by itself does little or nothing to bring output into adjustment with outlets. Such consolidation, however, increases the incomes of families on the enlarged units and improves the per capita income picture.

In view of the technical knowledge and the managerial skill required in successful commercial farming, the capital investment involved, and trends in the national income, there are real grounds for concluding that farmers have not shared fully in income gains in recent years. The remedy for this lies in adjustments, not merely in production but in capacity to produce and by shifts in production resources employed for commodities in surplus.

It should be noted that soil surveys are exceedingly valuable from both the applied and fundamental points of view. They provide basic, fundamental and specific natural resource information, and add to the "growth of knowledge" about our soils. They also serve principal functions of soil science in agriculture, forestry and engineering, namely, the prediction of soil behavior under defined use and management or manipulation. In agriculture and forestry, the prediction of yield and quality of crops and trees from given soils under particular management is important; in engineering the performance of soils as construction materials, such as for super-highways, as sites for septic tanks or foundation materials is the principal objective. Crop production, land valuation and management, watershed and conservancy district programs and rural and urban zoning activities, among others, are increasingly dependent on soil survey information and basic research facts about soils.

Research

It is evident that there are serious deficiencies so far as our understanding and knowledge of the soil resources of Minnesota are concerned. Physical and chemical properties of the many different soils are not specifically known. Soil management research information to underwrite multiple-use decisions is sparse. Soil erosion continues to be a serious problem. The trend towards larger farm units and fewer farmers is likely to continue. Increased efficiency of farming operations and greater management flexibility are required. Encroachment of farmlands by super-highways, urban and industrial developments will increase rapidly. Strengthening the field and laboratory research program is important for Minnesota's many different soils so as to establish lime, fertilizer and soil amendment needs and the cultural practices necessary for the control of erosion and improvement in water management, including moisture conservation and maintenance of soil tilth. The relationship of soils to both forest and wildlife management is greatly in need of more emphasis. Reconnaissance soil surveys in the wildland areas, together with standard detailed soil surveys on urban and the better land areas should be accelerated. Surveys are basic to land-use capability classifications and zoning programs. Rural and urban zoning activities should be accelerated, as soil resource information becomes available. Financial support, substantially above present levels, is badly needed to increase public understanding.

Additional funds are needed to strengthen the field and laboratory research program that is basic to developing ways and means of solving many existing soil problems.

A five-year plan of classifying the State's lands would be a great step forward in any comprehensive zoning program.

Substantial financial support is needed to advance the knowledge and understanding of the basic relationship of soil science to farming, forestry and engineering — in fact, to all the natural resources of the State.

LAND-USE PLANNING

State Plan

A State land-use plan should be developed for Minnesota. The chief components of that plan will serve as a guide to land uses and a program of priorities for capital improvements.

All counties should have county planning commissions, zoning and subdivision regulations. These planning commissions should work closely with county officials. Enabling legislation now exists, and a number of counties have already established planning commissions. A State-wide guide plan should be prepared for the assistance of these planning groups and county officials.

Requirements of county zoning and subdivision regulations should be developed to aid active planning commissions in all counties of the State, backed up by a State-wide plan.

Programs of land acquisition, highway construction and roadside development should be accelerated and carefully coordinated. These are public policies which should be adopted and implemented with high priority.

Continued emphasis needs to be placed on proper land use and management — those programs administered by the State Soil and Water Conservation Committee and the Soil Conservation Service of the U.S.D.A.

NORTHEASTERN MINNESOTA

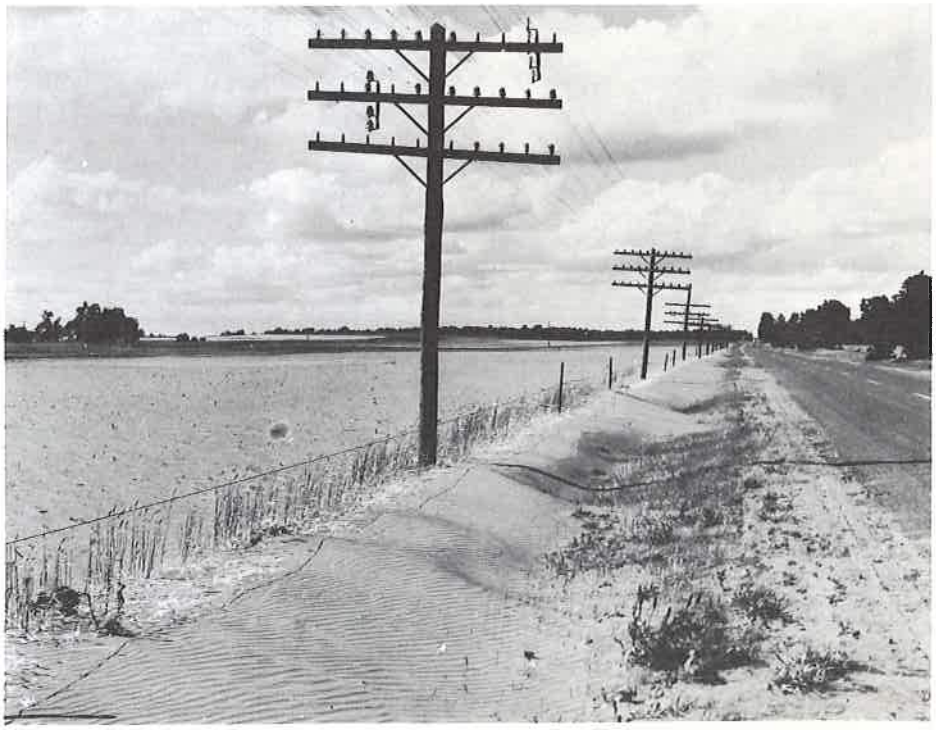
Characteristics

The land problems of Northeastern Minnesota vary widely with respect to soil productivity and farm income potential. About a third of this area is rough land — stony, marshy and mostly idle from a crop-bearing standpoint. The other two-thirds may be classified as fairly good specialized crop areas, part of which is recognized to be marginal or sub-marginal.

The marginal and sub-marginal lands vary as to soil types and land use capabilities as well as types of owners. Probably this area contains approximately 9 million acres or 17½% of the State's land area. It includes low-producing crop and grazing lands.

Some of this land is in subsistence farms, some is owned by the State, other lands are in unsold trust funds and in

Shifting sands: emphasis is needed



Corn to make meat: Minnesota is primarily a livestock State

recreational areas. The counties have title to over a third through tax forfeiture.

A land sales service designed to correlate the pertinent factors involved in land suitable for sale should be established in the proper State department. Such a sales service will require sufficient funds to provide the necessary land surveys as to accurate descriptions of boundary lines of all properties listed for sale.

Administration of the pertinent laws relating to boundary fences should be improved. The same situation exists with respect to requiring weed control measures that involve costs the lands cannot bear.

Land assessments for taxation purposes in this area should be uniformly based upon the true and full value of the property.

There needs to be a reorganization of public services in this area to bring them into line with tax revenues based upon the ability to pay.

AGRICULTURE

Prospects

The larger share of the State, especially the southern and western parts, will continue to be one of the leading agricultural areas of the Nation. Farming, where commercially developed, in the cutover counties of Northeastern Minnesota will continue. However, any considerable expansion of agriculture in this area to land not now in developed farms is not in prospect, at least for a considerable period of years, in view of the fact that land now in farm use can more than meet market requirements for at least a decade. Many of the rural people in the cutover area need to look outside of agriculture for sources of income, and much of the land should be assigned to other uses.

Meat and Dairy Products

Minnesota will remain primarily a livestock state. Southern Minnesota will continue to be part of the corn belt, especially the south central and southwest areas, with meat animals, mainly beef cattle and hogs, providing the major sources of farm income, and feed and forage the leading land use. Higher consumer incomes and growing population will increase meat consumption, especially beef. Dairying will continue the major enterprise in a broad belt from Southeastern Minnesota well towards the northwest. Except in metropolitan milk sheds, of which the Twin Cities is the most important, the outlet for dairy prod-

ucts will be in manufactured dairy products such as butter, cheese and dried skim milk. Population growth will expand markets but the decline in per capita consumption of butter may remain an offsetting influence for some time to come. Considerable expansion in commercial outlets for dried skim milk will be needed to free this product from dependence on Government purchases and disposal. Minnesota's dairy markets may improve if restrictions on entry of outside milk into metropolitan areas are reduced. Dairying will remain the leading source of farm income on many of the farms in the cutover area.

Both dairy and poultry may expect a continuation in the number of producers with further increases in the size of herds and flocks. Soybeans appear destined to see further expansion, especially in Southern Minnesota providing market development for beans, meal and oil continues. Areas served by canning plants and factories may see some increase in canning crops and sugar beets although keen competition from other producing areas must be expected. Minnesota is the leading turkey producer and the specialized growers of this product and their localities have suffered the price consequences of temporary overexpansion. A growing market will offer some opportunities for the future.

Wheat and Potatoes

Wheat is the most serious farm market surplus in the country. This problem is acute in the Red River Valley, the principal area in which wheat remains an important cash crop. The surplus of wheat is much more heavily weighted by hard winter wheat grown mainly in the Great Plains and soft white wheat in the Pacific Northwest than by hard spring wheat grown in the Red River Valley. The need for reduction in wheat acreage in Minnesota hence is less than in the areas which contribute heavily to surplus. It is to be hoped that Federal farm programs will recognize this fact and concentrate their adjustment efforts in selected areas.

Potatoes are produced mainly in localized areas such as the Red River Valley by specialized growers and are expected to remain important in these localities. Both potatoes and wheat have experienced a long-time decline in per capita consumption. The drop in the case of potatoes may have stemmed somewhat by increased processing which provides consumers with a greater variety. This development has brought added industry and employment to some areas but its future growth depends on success in expanding outlets and meeting competition of other products and areas. There may be some opportunity of expansion for the production of certified seeds in some localities. While extensive expansion of cattle grazing may not take place because of competition from western ranges, some development may occur in special situations.

THE CONSUMER'S RELATIONS TO AGRICULTURE

By MRS. KERMIT V. HAUGAN

Great is the interdependence that exists between the consumer and agriculture. It is upon the farmer that the consumer relies for all his food, much of his clothing and some of his shelter. On the other hand, urban prosperity provides strong markets and job opportunities for those concerned with food distribution. What happens to agriculture and what happens to industry is the mutual concern of both the farmer and the consumer.

With the increase in the size and mechanization of the farms and the decrease in the number of persons in farming, the rural person himself has joined the ranks of the urban consumer. In addition to this the farmer remaining on the farm has changed his status of one-time self-sufficiency to consumers of varied industrial products in noteworthy proportions. Statistics which bear this out come from *The Government and the Farmer* by Walter Daniels. Each year farmers of the United States consume:

7 million tons of finished steel
50 million tons of chemical materials
16½ billion gallons of crude petroleum
320 million pounds of raw rubber
15 billion kilowatt hours of electricity

Improvements in mass media tell the producer of pulp wood that each child born in America today represents a potential consumer of 15,000 tons of paper and paper products in his lifetime.

The relationships of the farmer and consumer are further influenced by changing social patterns. Migration of rural people to urban centers has increased the number of consumers for whom those remaining on the farm must supply their foods fibre needs. Farm homes have been urbanized so that very little, if any, difference exists between the rural and the urban home. Farmers have become as mobile as their city fellows and are thus consumers of all products and supplies which keep them mobile. Although all has not yet been accomplished to provide equal opportunity in rural areas for health and medical care, progress is being made.

Some vital changes in the field of economics are influencing consumer-farmer relationships. No longer is wheat sold as wheat. Today wheat is sold as bread or as a prepared mix. The span between the producer and the consumer has been spread to include 10,000,000 workers engaged in processing and distributing food. A consumer who is watching a family diet may change her taste for one item completely and substitute therefore something else. Witness the preference for margarine over butter in many instances. The farmer responds by producing the raw material for margarine and greater quantities of Minnesota dairy products are sold outside of Minnesota. Greater demand for protein by the consumer, either for dietary reasons or because of a higher level of income, results in the farmer producing the source of protein to meet the demand.

The higher the level of prosperity of the consumer, the greater is the demand for highly processed foods. Today one-sixth of all food is sold in restaurants.

In the political area the relationship between the consumer and farmer appears to leave the consumer as the forgotten person. Farm policy is determined by the lawmakers, the politicians, and the administration consulting with the farmers but the consumer as such is not included. President Kennedy said in his speech on *The Consumers,* March 15, 1962: "Consumers, by definition, include us all. They are the largest economic group in the economy affecting and affected by almost every public and private economic decision . . . They are the only important group in the economy who are not effectively organized, whose views are often not heard." An educational program is needed to inform the consumers of agricultural problems.

WATER

ADMINISTRATIVE

Co-ordination

Because of the importance of water in modern life, many problems arise. These become intensified as occupancy of a region increases. For each problem there is a law or regulation of some sort, and consequently there is a multitude of agencies dealing with water under various laws and regulations. The result is overlapping or intermingling of jurisdiction and, not infrequently, conflict of opinion, methods, etc. In Minnesota there are 18 agencies at the National and State level which deal with water. In addition, there are governmental subdivisions such as district courts, boards of county commissioners, township boards, drainage and conservancy districts, watershed districts, soil conservation units and municipalities.

An examination of the laws of many states shows that they are beset with the same multitude of agencies. In any event, in Minnesota no more agencies or divisions of government on a State-wide basis should be created, and an attempt might well be made to consolidate some of the existing groups. We should not rely on unpaid citizens' committees. A few individuals do an outstanding job; but on occasion, there are those who have a personal interest and the decisions reached (or lack of decisions) are in the long run not likely to be in the public interest.

With such a multiple list of agencies it is not surprising that any unified approach to problems has been impossible. Indeed, it is difficult to see how a unified approach is possible under present conditions. A much more overall authority should prevail, insofar as State functions are concerned.

Means should be developed by which the policies of the various State agencies officially concerned with water conservation and use can be better co-ordinated and made more consistent with one another and with policies of local government units. It should be the responsibility of the Governor and his staff to compel co-operation and co-ordination whenever there is disagreement.

The present advisory role of the Water Resources Board should be strengthened by giving the Board authority to make binding decisions on disputes between State agencies involving matters of water policy. The Board should also be given sufficient funds for technical help to do the job needed for the State as a whole. No more agencies on a State-wide basis should be created.

TASK FORCE

NOBEL SHADDUCK, Chairman
DOUGLAS W. BARR
FRANK P. CRIPPEN
ORVILLE C. PETERSON
GEORGE M. SCHWARTZ

The Minnesota River, 1962: surface waters are abundant

WATER SUPPLY

Surface Waters

Fortunately, surface waters are abundant in many areas of Minnesota, although, precipitation is moderate to low with a decrease from east to west. The low temperatures over the long winter and relatively high humidity in summer result in low evaporation, thus giving high efficiency to the available moisture.

The Division of Waters of the Department of Conservation is engaged in inventorying the lakes, and preparing reports on the watersheds of the State. This is basic data for the conservation of water, and should be carried on as rapidly as available funds permit. The topography of the watershed has an important influence on the amount and rate of run-off.

Besides being valuable for recreation, our lakes serve a dual purpose as reservoirs to restrain flood waters. Maintaining their efficiency in both respects requires control of the fluctuation, pollution and excessive use of water for irrigation. It is natural for lakes to become filled with sediment, both organic and inorganic, thus cutting down their water-holding capacity. Many shallow lakes have degenerated into bogs and marshes through these processes. As the lakes become polluted with nutrients, the organic process of filling is greatly accelerated.

The streams present the dual problem of floods due to rapid run-off in spring or periods of high precipitation, and low water-flow during drought periods, usually in late summer, fall and winter. Conservation of water in the headwaters and watersheds of the streams is necessary to reduce the flood stages, and increase the flow during periods of drought.

We are fortunate in having underground water of a low temperature. For many industrial uses the temperature of available water is a very important factor so that certain industries may be encouraged to locate in Minnesota because of a uniformly low temperature of cooling water.

Underground Waters

The supply of underground water for domestic and industrial use is extremely complex. In some areas of Minnesota, such as the Twin Cities artesian basin, enormous amounts of underground water are available. There are other areas in the State where it is practically impossible to obtain satisfactory groundwater. This is a natural result of the variation in the geology throughout the State. The situation is too complex to be treated in detail here, but briefly there are two main

variables: 1) solid rocks usually at depth; 2) glacial and other unconsolidated deposits overlying the rock. Where the surficial deposits contain sand and gravel, water is usually abundant; but the quality varies from soft to hard. Where the deposits consist of clay and silt, water is usually not available. Somewhat the same situation prevails with regard to the rock. Where sandstone, limestone and dolomite are present, water is often available in large amounts, but may be available only at depth. If the rock is granite, slate, quartzite and allied types, little or no water is likely to be available.

There is need for a more intensive study of the occurrence of water in the State. For example, many more observation wells are needed to record fluctuations in the water table. There is also great need for an increase in the rate of topographic mapping, an essential in water studies.

Adequate support for needed surveys should be made available, if the complex questions involved are to be answered on a State-wide basis.

Twin Cities Area

The water supply of the Minneapolis-St. Paul area has been a perennial source of investigation and debate; but the problem has become critical due to the rapid expansion of suburbs, many with shallow wells and septic tanks on small lots. The State Board of Health has taken an active part in defining the pollution problem, and their work should be more actively supported. There is, naturally, debate about certain aspects of their work, particularly with regard to nitrates in water, and further research on this is necessary.

The supply of water from both surface and underground sources has been investigated by several public organizations, and this work should be continued. The data are available in several published reports.

The problem of surface water supply centers largely on the Mississippi River and its tributaries. This involves the Federal Government represented by the U. S. Army Corps of Engineers. An investigation is being carried on by the Corps at present and will doubtless outline the problem more definitely. Completion of that report will be a most valuable step. The Minnesota Legislature in 1961 adopted a law authorizing and directing the Commissioner of Conservation to exercise the State's right to control the headwaters of the Mississippi and to enter into agreements with the Army Engineers for joint control. This seems reasonable, since the headwaters are located in Minnesota and since logical need for flood control and navigation has declined.

The St. Croix River is a potential source of excellent water for the Metropolitan Area and may present a lesser problem than storage in the headwater lakes of the Mississippi. If the St. Croix is developed as a supplement to the Mississippi and underground water, the Minneapolis-St. Paul area would be in a preferred position regarding water supply when compared with other large metropolitan areas of the country.

Preliminary engineering studies of the St. Croix possibility should be made.

The use of underground water is one of great complexity, particularly because of the large number of separate and often conflicting interests. There is at present only nominal control of usage, and there is opposition to any realistic plan. Artesian water levels show a small, but significant decline, particularly in the areas of greatest use. Only a small amount of information is available as to the water table in the Twin Cities area, and it would be desirable and important to obtain much more data on this aspect of the water problem.

Funds should be made available for an expanded program by the Division of Waters or such agency as may be assigned the overall responsibility for the Twin Cities water problem.

Some control of wasteful practices in utilization of underground water is urgent. In the long run an overall plan for utilization of underground water in the metropolitan area will be necessary and the time to start is now.

The main essential at present is accumulation of additional data by the Division of Waters and the U. S. Geological Survey and study of the administrative problem by the Metropolitan Planning Commission, with active consideration of the problems by the Legislature. A competent technical unit is needed to handle the difficult problems involved in a unified approach to the long-term water supply of the Twin Cities and suburban metropolitan area.

It is the conclusion of the present study that only a unified approach to the problem of water supply for the entire Twin Cities area can result in a long-term solution at the least cost to all concerned.

FLOOD CONTROL

Federal Projects

The problem of flood control in Minnesota is not of large proportion as compared with some states. This is the result of location at the headwaters of three major drainage ways of the Continent and to the glacial deposits which form innumerable lakes, marshes, swamps and potholes. The situation, however, differs radically from area to area, and localized flooding is severe at places. The problem of flood control has become largely one for the Federal Government, represented by the St. Paul District of the U. S. Army Corps of Engineers. A recent news release by the St. Paul Office lists the following Minnesota projects which are recommended for construction: Big Stone Lake, Warroad River, Roseau River, Red Lake River, Wild Rice River, Rum River, Zumbro River. Five additional areas are recommended for study. Other studies classified as inactive are Root, St. Louis, Snake, Cannon, Whitewater, Minnesota and St. Croix Rivers.

State Participation

A great amount of work is needed in spite of the favorable factors noted above. The problem is, of course, money. Congress must appropriate money for the study, planning and construction; but certain aspects, *such as the needed land, easements, responsibility for damage and cost of operation,* are the responsibility of the local governmental units. Minnesota does not have a flood control unit in the State Government, and the Division of Waters of the Department of Conservation does not have funds or authority for flood control. They do review and approve plans submitted by the Corps of Engineers. It would seem necessary that the State should have some part in the solution of flood control problems. Some state governments do accept part of this responsibility. In any event, the lack of authority or willingness to raise the necessary funds has been a handicap to Federal solution of some of the problems.

It should be noted that in some areas the cost of flood control is greater than the assumed benefits, in which case the Corps of Engineers does not recommend the project. This is also true of the Soil Conservation Service.

It is recommended that local units of government be given authority to guarantee performance of their obligations under agreements with the U. S. Army Corps of Engineers, regarding flood control.

Run-off Control

It would not be appropriate to end the discussion of flood control without reference to the overall problem of floods and excess run-off. Whenever a virgin area is occupied, the land cultivated, and other natural results of occupancy occur, the effect is to increase the rapidity of run-off, and thus an increase in the peak flow in streams and a decrease in the minimum — usually in late summer, fall

and winter. Drainage, straightening and deepening of channels to relieve local flooding, and often road and other construction, tend to aggravate the situation.

It seems to be agreed that proper soil conservation (not drainage) in all headwater areas is one of the best ways to aid in controlling the rapid run-off. Infiltration and controlled run-off through storage will reduce flooding as far as practical. There is evidence, however, that in extreme conditions the effect of local headwater controls may be all but obliterated.

Flood-Plain Zoning

It is evident, based on widespread experience, that flood-plain zoning is highly desirable to avoid damage to man-built structures. The difficulty now is that occupancy is currently so widespread that zoning can be only partly effective. In any event, if people insist on encroaching on an area subject to flooding, there should be some way to warn them of the risk taken and inform them that government units will not reimburse them or spend excessive amounts of money to protect that which should never have been built.

It is desirable that local government units have zoning authority and should utilize flood-plain zoning to reduce potential damage occurring as a result of unwise occupancy of land subject to flooding.

It should be recognized that flood control is never purely a local problem. The water forming the flood normally comes from upstream where the works of other governmental or private units may have aggravated the situation. On the other hand, the Federal Government should not be expected to assume the full cost of projects which are essentially of local benefit.

POLLUTION

A Serious Problem

Pollution of water, both surface and underground, is a frequent and unfortunate result of human occupancy of a region. With increasing population and development, pollution rises rapidly and, in same cases, the increase is of astronomical proportions. The problem is essentially twofold: 1) the pollution resulting directly from animals and humans; 2) the pollution from industry, which ranges widely and which may be mechanical, chemical or biological in nature.

It is imperative to our future that more attention be paid to pollution. In the early days of settlement of the area, the abundance of water allowed the indiscriminate dumping of sewage into the streams and lakes. Nature more or less took care of the situation. This led to public acceptance of such an easy solution of a problem, a false security, and not much thought was given to the problem. In fact, there is widespread feeling that this easy disposal is a right which must not be taken away. Any thinking person will, however, recognize that this cannot go on.

Vigorous methods to combat every form of pollution must be taken.

It will be impossible to supply the large quantities of water required in the future unless water is not only conserved at the source, but preserved from pollution which will make it unfit for further use as it makes its way to the sea. There is no avoiding the fact that pollution control will be a continuous and expensive problem.

Streams

It is safe to say that the average person has little knowledge of the extent of stream pollution. The Minnesota Department of Health has systematically sampled some of the important streams in recent years. The data is voluminous, and must be studied in detail to appreciate the magnitude of the pollution problem. Only a few general facts can be given here. Coli bacteria are generally used as an indication of organic pollution since these come from the intestines of warm-blooded animals. They are an indirect indication of the possibility of the presence of harmful bacteria.

The Mississippi River above Minneapolis has a moderate coli population due to pollution from municipalities and other sources upstream. In the period 1953-1959 the lowest count (250 at Anoka) was on March 12, 1959. This is considered unsafe for swimming. The highest (92,000) was on June 27, 1956. At Hastings, below the metropolitan sources of pollution, the lowest count for 1958-1959 was 4,500 on May 5, 1958; but the highest count was 540,000 on October 29, 1958. Perhaps more meaningful are the averages for 1958-1959: at Anoka 4,353, at Hastings 102,809, at La Crosse 2,393. The last shows that the River can, to some extent, reduce the pollution. Even the effect of the large metropolitan area is dwarfed by coli pollution in some of the smaller streams in the State, which, because of low-flow, are not able to handle the sewage dumped indiscriminately into them (see table).

It is well known that fish require a certain amount of dissolved oxygen in water to continue to live. It probably is not so well known that many of the State's streams often fall below the danger line. Most fish cannot endure less than two parts per million of dissolved oxygen, and many species require at least four parts per million. The greatest variety of fish thrive at about nine parts.

Minnesota Board of Health samples show that between 1953 and 1959, on certain dates, the following rivers had a dissolved oxygen content of less than three parts per million: Blue Earth, Cannon, Cedar, Crow, Des Moines, Minnesota, Mississippi, Red, Red Cedar, Rum, St. Louis, Shell Rock. The list would doubtless be increased if all streams had been sampled.

The serious nature of the pollution problems cannot be doubted when the available data are studied. Probably the only sizeable streams which do not show serious pollution are those along the North Shore of Lake Superior.

Twin Cities Area

In Minnesota not much was done on proper sewage disposal until the decade of 1930-1940. By 1930 the pollution of the Mississippi River in and below Minneapolis and St. Paul was so severe that action was required. The result was the organization of the Minneapolis and St. Paul Sanitary District, and construction

POLLUTION OF MINNESOTA'S SMALLER RIVERS, 1958-59

RIVER	MAXIMUM COLI COUNT	PLACE
Big Cottonwood	540,000	New Ulm
Blue Earth	540,000	Blue Earth
Cannon	350,000	Northfield
Cedar	16,000,000	Austin
Des Moines	79,000	Jackson
Rainy	92,000	International Falls
Red	5,400,000	Fargo
Rock	2,400,000	Lucerne
Root	160,000	La Crescent
St. Louis	7,240,000	Cloquet
Straight	1,600,000	Clinton Falls
Zumbro	540,000	Rochester

of the metropolitan system to serve the two cities and, in time, several of the suburbs. This was only a partial remedy, however, with the Mississippi to take care of the effluent, which contained a considerable degree of pollution. Thus, the problem has grown and the district has recently announced plans for a greatly expanded treatment plant. This, however, will attempt to solve the problems only for the two cities and the suburbs which are connected to the system.

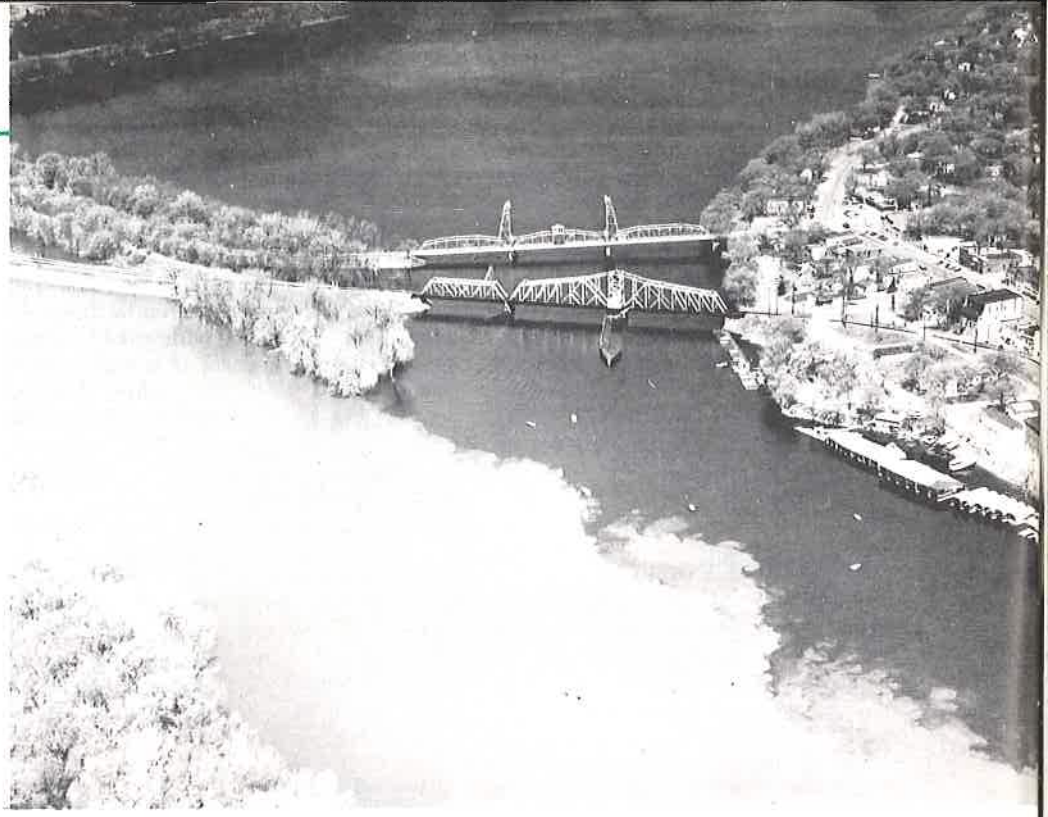
Since 1945 the population of the metropolitan area has spread into the large areas around the core cities with little planning for water supply and sewage disposal. The result has been chaos. The details of the problem have been cited in reports of the Minnesota Department of Health and the Metropolitan Planning Commission. It is impossible and unnecessary to review all of the available data in this report. It seems evident to an unbiased observer that the only logical solution to the sewage disposal problem of the Metropolitan Area is an overall plan administered by a proper technical authority. It is unrealistic to expect that each of the more than 100 independent governmental units will, or can, solve the problem independently. The problem is so complex that even a unified and properly staffed approach will encounter great difficulties. The expense will be great; but, in the long run, a unified approach should furnish the most economical and logical solution of the problem.

The above should not be interpreted to mean that only one single system should be developed. That is an engineering problem and logical solutions to the various aspects may be expected only after proper engineering studies have been made.

It is recommended that the authority to study and plan for sewage disposal of the metropolitan area, and possibly, also, to build and maintain sewage treatment plants and interceptor or intermunicipal trunk sewers for the Twin City area be assigned to a single technical unit. The local system of laterals and trunk mains should remain in the hands of municipal collection systems. This unit should be specifically under the authority of the Water Pollution Control Commission.

State-wide Sewage

The emphasis on the sewage disposal problem of the Minneapolis-St. Paul metropolitan area should not overshadow the pollution problem for the State as a whole. It is inevitable that the problem should be severe in a great population and industrial center; but, in some respects the problem, particularly its financial aspects, is more severe for many of the smaller urban areas because of the limited population and industry to spread the cost. It is true, moreover, that in villages where local wells and cesspools have been utilized, the pollution problem, as it affects public health, is more severe than in the larger villages and cities which have long had central water systems and sewage disposals of a sort.



The Mississippi meets the St. Croix at Prescott: vigorous methods must be taken

Because of the financial problem, many cities and villages have been reluctant to tackle the problem. This led to the establishment by the Legislature of the Water Pollution Control Commission with somewhat broad powers to induce control measures determined as necessary by the studies of the Minnesota Department of Health. Some advances have been made as a result of their work, but much more remains to be done; in fact, it is probably true that pollution has increased faster than it has been remedied.

The present Pollution Control Commission, through lack of authority or inadequacy of the law and lack of enforcement, has not accomplished the necessary improvement in the broad problem of pollution. The most effective means of compliance has been to deny permits for extensions at sewer facilities. We believe this program is being intensified, and that it should be enforced.

It is recommended that the Water Pollution Control Commission be reorganized to place less emphasis on ex-officio representation by over-burdened State department heads, that it be given sufficient technical, paid personnel to carry out its duties effectively, and that its authority to eliminate pollution of underground, as well as surface, waters should be clarified. The Commission should be encouraged to act vigorously in co-operation with the State Board of Health to eliminate water pollution.

Industrial Pollution

The most concentrated and severe problem of pollution control is furnished by industry. As previously noted, the pollution may be of different kinds if the word is used in its broadest sense. Mechanical pollution consists of inorganic material in suspension in water. This is a large scale problem in the concentrating plants of the iron mining industry, gravel wash plants, etc. This type of pollution is relatively easy to control by settling basins. Such water may be recovered and used over and over, as it usually is not polluted in a biological sense.

Pollution by organic matter, such as caused by meat packing plants, creameries, beet sugar factories and potato washing plants, is a serious problem because of decay of the organic matter with accompanying odors and consumption of oxygen in the polluted waters. Residual nitrates and phosphates cause the effluent waters to be highly fertile and promote the growth of algae and other low forms of life. These, in turn, decay and cause not only objectionable odors but depletion of oxygen.

The most difficult problems in some cases are furnished by chemical pollution. This is extremely complex, involving a great number of compounds both organic and, especially, inorganic. Large industries involved are wood pulp plants (which use sulfur compounds), oil refineries and many industries which use

chemicals in their processes.

The pulp and paper plants are a good example of the complexity of the problems. The resulting pollution is concentrated and highly objectionable. As a result, the individual firms, as well as associations, have worked on these problems for years without finding an entirely acceptable solution. The natural first reaction to industrial pollution is to say that the industry is responsible, and therefore should be required to remedy the situation. The privilege of using water implies the obligation to re-condition it. Unfortunately, the problem is not always simple. In the case of new processes there may be no known adequate treatment, and expensive research may be necessary. The cost of plant and operation may be high. In more serious cases, time must be allowed for a solution of the problem, but this should not be used as a subterfuge for doing nothing.

In short, the problem of industrial pollution is one whose solution requires the best efforts of all concerned. Industry must accept responsibility for pollution for which they are responsible. One of the major needs is for more research on all aspects of the pollution problem. In general, this research should be largely a Federal responsibility because the problems are nation-wide.

One of the important aspects of the pollution problem in general is education of the public to the realities of the situation so that there will be better acceptance of the necessity for the stringent measures needed for control of pollution.

SOIL CONSERVATION

The role of soil conservation in relation to water has been repeatedly mentioned. It therefore seems desirable to treat the problem briefly. It is a truism that the manner in which the soil is managed has a direct bearing on the run-off and this, in turn, affects the degree of soil erosion and opportunity for seepage into underground storage. The soil on which the water falls must be maintained in a condition that will permit maximum infiltration without saturation to the detriment of vegetative growth.

Contour farming and check dams have a direct effect on run-off and seepage. A cover of vegetation prevents erosion and rapid run-off, thereby aiding in flood control, but its effect on seepage depends on the amount of transpiration by the vegetation, which may actually consume the water saved by retarding the run-off. Contour strip cropping, buffer strips, grassed waterways and cover crops are all helpful in soil and water conservation.

The effect of drainage ditches and tile has been argued for over fifty years but little data is available as to the overall effect on run-off, floods and seepage to underground reservoirs. Millions have been spent to drain, but practically nothing to determine the results on water conservation. Installation of land treatment practices on cultivated areas and land use determination so as to designate areas for forests, wild life, recreational land and waters, and reservoirs for urban storage is necessary. Proceeding on the basis of land use directs thinking along the lines of "zoning". This can be stimulated by such groups as county commissioners, chambers of commerce, extension services and other groups under existing laws which may need amending as progress is made.

Efforts must be made toward conservation of run-off water by directing it to natural and artificial reservoirs, areas of recreational water, and underground where practical.

There are conflicting statements made concerning what appears to be cross purposes in the use of public funds by both the State and Federal agencies.

On one hand, there is the policy of drainage; on the other hand, wetlands acquisition and development. Most of the friction stems from failure of agencies to interpret national and state policy in an unbiased manner.

As a result of consideration of the problem of drainage it is suggested that drainage be confined to agricultural land and be determined by the economic feasibility based on the farming unit or farming community. Furthermore it is suggested that drainage of water areas overlying good agricultural land be deferred until such time as the need for food and fiber is an economic necessity. Water areas overlying soil unsuited for agricultural use should be preserved for wildlife, recreation, etc.

Matters of conflicting agency policy should be decided by the Water Resources Board.

It is desirable that public funds be used to assist in conserving water in headwater regions, such as Minnesota.

Itasca Park: it all starts here

FORESTS

BACKGROUND

Importance to Minnesota

The important role of Minnesota's forests in the early growth and development of the State is well recognized. Their importance today as the basis for one of Minnesota's largest industries — the forest products industry — is not fully appreciated by the general public.

With the decline of agriculture in Northeastern Minnesota and the difficulties besetting the mining industry, our forest resource is receiving and will continue to receive greater attention. These forest lands and their productivity in terms of timber, recreation, wildlife and water are the key to the future of the northeastern forested counties.

The management of the State's forest resource and especially that of its northeastern counties, where this resource is of outstanding importance, is beset by a number of problems, some of which are more serious, others less so. Only those of greatest importance are presented in this summary.

To provide a basis for understanding the problems pertaining to this resource and the forest products industry connected therewith, there is presented immediately hereafter a summary of the prevailing situation for Minnesota as a whole together with more detailed information for its 16 northeastern counties.

State-wide

At the time white man settlement reached Minnesota, approximately 31.5 million acres or 61% of the State's land area was forest covered. By 1953 this acreage had been reduced to 19.3 million acres (38% of the State's land area) of which 18.1 million acres (35% of the State's land area) is now classed as "commercial forest" land, that is, land which is available for, and capable of, raising timber crops. However, about 25% of this commercial forest land is non-productive due to the failure of regeneration to follow the logging of these lands and the land clearing activities which followed such logging. Actually, the State's presently productive forest land has been reduced to approximately 13 million acres.[1] But the forest growing upon these lands is one of the State's important resources.

Sixteen Northeastern Counties

(See map inside front cover)

Approximately 80% of Minnesota's forest land is located in its 16 northeastern counties, earlier called the "cutover" and more recently the "forested" counties. Although woodlands and tree crops are important in the counties bordering this 16-county group and in all of Southeastern Minnesota, they do not constitute the major resource in these counties that they do in the 16 northeastern ones. For this reason emphasis is being concentrated on the forest resources and forest products industries of the State's northeastern counties.

The commercial utilization of the timber being cut within these counties is providing about 2,210,000 man-days of employment for its harvesting, plus an additional 1,980,000 man-days of employment in its processing.[2] Based upon reports received from its membership, the "Forest Industries Information Committee of Minnesota" estimates the value of the products produced at about $250 million.

Confining our attention to "commercial forest" lands, which are the lands capable of producing commercially usable crops of wood, but not including lands in this classification which have been withdrawn from such production, and our consideration to the 16 counties[3] within which 80% of the State's commercial forest is located, we find ourselves faced with the situation summarized on the following pages.

Birch stand: who'll buy our hardwoods?

TASK FORCE

RAYMOND J. WOOD, Chairman
JOHN H. ALLISON
FRANK H. KAUFERT
LAWRENCE P. NEFF

[1] "Minnesota's Forest Resources", Forest Service, U.S.D.A. Forest Resource Report No. 13, 1958 (data provided by forest survey completed in 1953).

[2] "Report on Minnesota's Northern Forest Area", compiled August 1958 by Sigmond A. Zasada, Forestry Committee Chairman, Minn. Div., Izaak Walton League.

[3] Aitkin, Becker, Beltrami, Carlton, Cass, Clearwater, Cook, Crow Wing, Hubbard, Itasca, Koochiching, Lake, Lake of the Woods, Pine, St. Louis and Wadena.

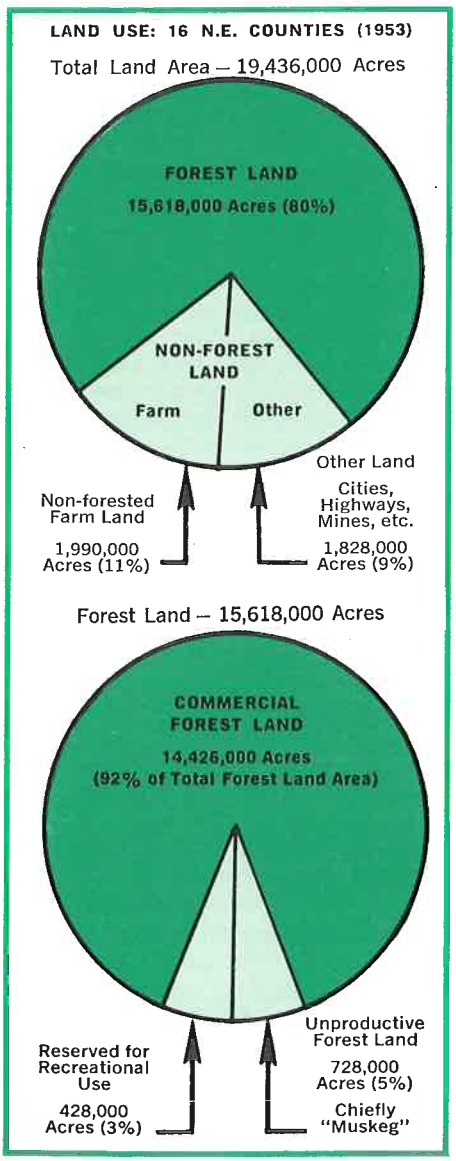
As of 1953, the allowable (really the recommended) cut,[4] as calculated by the U. S. Forest Service, for these counties and for this group of conifers was 891,000 cords. For the aspen it was 965,000 cords. At that time the pulpwood cut was about 625,000 cords for the conifers and 265,000 cords for the aspen, the total pulpwood cut being about 890,000 cords. As of 1960 the pulpwood cut for the conifers was essentially unchanged but the aspen cut had risen to about 390,000 cords, making the total pulpwood cut about 1,015,000 cords.[5]

As of 1953 the total allowable cut for this area, including all species, and for all purposes, was approximately 2,567,000 cords. But the actual total cut, both then and now, is much below that figure. Our present industries are unable to market products manufactured from aspen and other hardwoods in quantities commensurate with the rate at which those species are building up their volume through growth. The Minnesota Department of Conservation's Division of Forestry reports that the volume of timber standing upon State-owned lands in 1960 totaled 18 million cords and that the growth on State forest lands was increasing at the rate of 400,000 cords per year. During the last five-year period, the State was able to sell an average of only 277,000 cords per year. Aspen accounted for only 56,000 cords of the actual cut taken off State forest lands. The recommended cut for this species was 340,000 cords per year.[6] A similar increase in the volume and rate of growth for aspen is probably taking place on both Federal and county lands. On privately owned land the aspen cut as of 1953 was nearly up to its rate of growth.[7]

Information is not yet available on the 1960 total cut and its distribution between different product lines, except for pulpwood, as given in the above paragraph.

[4]"Allowable" cut is the volume of merchantable live sawtimber and poletimber that can be cut during a given period while building up or maintaining sufficient growing stock to meet specified growth goals". See ref. 1, p. 23 plus Table 20.

[5]Horn, A. G., "Pulpwood Production in Lake State Counties, 1960". Sta. Paper No. 94, Lake States Forest Exp. Sta., U. S. Forest Service.



RESEARCH

Funds Needed

A third of the State's area is better suited to growing timber than to other uses. If that part of the State is to have an expanding economy, it must have vigorously pursued forest management and forest products research. Since 56% of its forest is in State and Federal ownership, and most of the remainder is in small ownership that cannot afford research, Government must provide most of this urgently needed research. Since over 40% of our forest land is under State control, the State should provide most of the funds needed to support this research.

Currently, the State, primarily through the University, is investing about $100,000 in forest products and management research; the U. S. Forest Service, about $250,000 in management research; industry about $500,000 in products research. These sums total about .3 of 1% of the value ($250 million) of the products harvested from the State's forests. This ratio compares very unfavorably with the 1% to 5% of gross products values invested in research in most other products fields. The investments in forest management and products research in Minnesota are about one-fourth the National rate.

The very high rate – over 500,000 cords a year – at which aspen and other low grade hardwoods is being accumulated in the State's forests, because of excess growth over use, indicates the great need for products research. The huge acreage of non-stocked or poorly stocked commercial forest land indicates the need for forest management research.

It is important and essential that the industries and Lake States Forest Experiment Station expand their research at the maximum possible rate. However, it is unlikely that the Lake States Forest Experiment Station, in the forest management field, or the forest products industries, in the products field, will expand their research sufficiently or rapidly enough to take care of the large and urgent expansion needed. Consequently, this expansion should be largely a State responsibility.

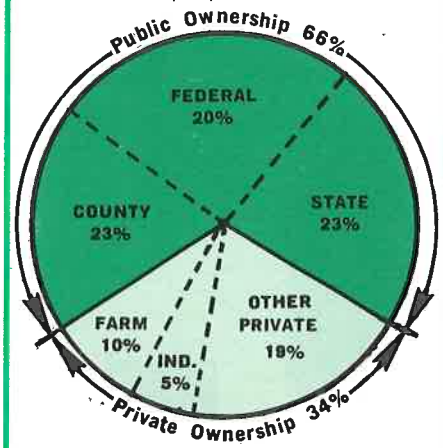
We recommend that the 1963 State Legislature provide the University of Minnesota with $220,000 annually of appropriated funds; these funds to be used for development of the following lines of research:

[6]Letter of 6/19/62 from E. L. Lawson, Division of Forestry, Dept. of Conservation.

[7]"Minnesota's Forest Resources", Forest Service, U.S.D.A. Forest Resource Report No. 13, 1958 (data provided by forest survey completed in 1953).

OWNERSHIP OF COMMERCIAL FOREST LANDS IN THE 16 NORTHEASTERN COUNTIES (1953)

Total Commercial Forest Land Area – 14,426,000 Acres



PUBLIC OWNERSHIP

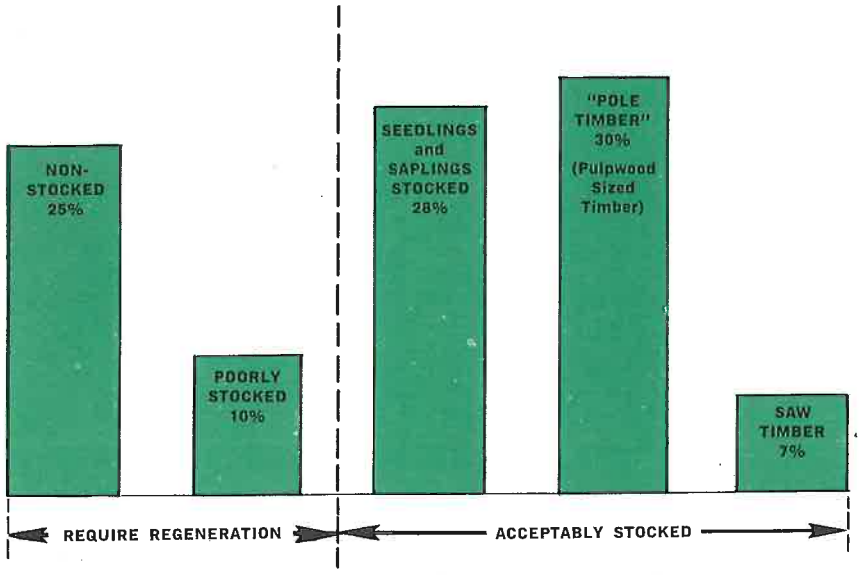
	Acres
Federal	2,958,000 (20%)
State	3,251,000 (23%)
County	3,293,000 (23%)
Total Public	9,502,000 (66%)

PRIVATE OWNERSHIP

	Acres
Farm	1,395,000 (10%)
Industry	771,000 (5%)
Other Private	2,758,000 (19%)
Total Private	4,924,000 (34%)

Note: According to the 1960 U. S. Census the farm forest land ownership in these counties is 1,395,000 acres, or 728,000 acres less than it was in 1950 (the 2,123,000 acres used in Zasada's 1958 "Report on Minnesota's Northern Forest Area"). Since most of this acreage has gone into "other private", it has been included in that form of ownership, although some of it, through tax-forfeiture, probably has gone to the counties.

TIMBER SIZE AND STOCKING SITUATION ON COMMERCIAL FOREST LAND (1953)
(Within the 16 Northeastern Counties)



	Acres
REQUIRING REGENERATION	
Non-stocked Area	3,681,000 (25%)
Poorly-stocked Area	1,405,000 (10%)
Total Area Requiring Regeneration	5,086,000 (35%)
ACCEPTABLY STOCKED	
Seedlings and Saplings	4,005,000 (28%)
Pole Timber	4,327,000 (30%)
Saw Timber	1,008,000 (7%)
Total Area Acceptably Stocked	9,340,000 (65%)
TOTAL COMMERCIAL FOREST AREA	14,426,000 (100%)

New Product Research. $100,000 annually to staff and operate the Forest Products Laboratory on the St. Paul Campus. It will be aimed at developing marketable products to be manufactured from the State's low quality and little used woods; at aiding small forest products manufacturing plants in solving problems which they themselves cannot afford to solve; at substituting Minnesota grown woods for woods being brought into the State from elsewhere; at carrying on fundamental research on the properties and qualities of the State's timber species; etc.

Forest Management Research. $50,000 annually to increase all phases of forest production research through the Cloquet Forest Research Center as headquarters. The Cloquet Forest Research Center is concentrating its attention on the problems connected with making forest lands more productive. To carry on such activities, it received during 1961 less than $30,000 of research funds. The increase of $50,000 proposed for the Cloquet Forest Research Center would help insure us of the type of research protection the Northeastern Minnesota forest resources require and deserve.

Related Research. $50,000 annually to build added strength into the research programs of forest ecology, economics, protection, genetics, measurements, recreation, aerial photography, forest wildlife, watershed management and tree physiology now being carried on by the School of Forestry on the St. Paul Campus with a skeleton staff.

Tree Disease and Insect Research. $20,000 annually to strengthen the University's research on forest and shade tree diseases and insects. The State has several insect and disease epidemics that are causing serious losses and the invasion of other diseases and insects are in prospect. For this reason research on the nature and control of these insects and diseases is critical and should be immediately provided for.

We recommend further that the Minnesota Natural Resources Council express to the U. S. Secretary of Agriculture the State's thanks and appreciation for the important research being done by the Lake States Forest Experiment Station of the U. S. Forest Service and that this Council urge the Department of Agriculture to strengthen and increase its research through this Station at the maximum possible rate.

REFORESTATION

A Big Problem

Minnesota has a big reforestation problem. As of 1953, the date of the last complete inventory of the State's forest resources, approximately 25% of its commercial forest area was considered non-stocked.[8] Most of this acreage, both upland and swampland, was formerly covered with conifers. Since predicted future timber markets are expected to require far greater volumes of conifers than of hardwoods, such artificial reforestation of these non-stocked forest lands as may be undertaken should be aimed at re-establishing the conifers upon them.

Since the State is the largest owner of these lands, it should assume leadership in their reforestation by activating a reforestation program commensurate with the extent of its non-stocked forest land holdings. As of 1960, the area of its holdings of such lands totaled 1,036,000 acres[9] of which 584,000 acres were in State forest status.

The re-establishment of the forest upon these lands involves dealing with two very different types of land, namely uplands and swamplands.

Uplands

The uplands definitely can be planted. It is a matter of cost. Most of the open and lightly brush covered lands which can be planted at a cost of $30 or less per acre already have been planted. Can the State afford to plant to conifers its next most favorable class of non-stocked lands, the approximately 80,000 acres now covered with upland brush and permanently non-merchantable aspen and oak?

Planting of these lands will cost $50 to $70 per acre. An economic returns study on Norway pine on average to good sites and 60-100 year rotations, made by the Lake States Forest Experiment Station,[10] indicates that this species will return an interest rate of 3% or more compounded annually on a stand establishment cost of $60 per acre. Three percent is approximately the rate now being secured by the State upon its "trust" funds. In this calculation, no allowances were made for administrative costs or for intermediate incomes from thinnings, which should be largely offsetting.

[8]"Non-stocked" forest land is formerly forested "land from which the trees . . . have been removed to less than 10 percent stocking and which has not been developed for other use". (See ref. 1, p. 49.)

[9]Source – Dept. of Conservation, Division of Forestry (unpublished data).

[10]Calculations based upon unpublished work by R. E. Buckman and A. L. Lundgren of the L.S.F.E.S.

The Department of Conservation's "Project 70", Division of Forestry section, includes a plan under which this acreage is to be planted, starting with 5,500 acres in 1964, thereafter the acreage to rise from year to year until it reaches 12,500 acres in 1973 and thereafter.

During its 1963 session the Legislature should activate "Project 70."

The amount of funds needed to carry it out will rise from $275,000 in 1964 to $750,000 a year in 1973 and thereafter. The State cannot afford to leave unplanted the lands covered by this plan.

Additionally, the counties own several hundred thousand acres of non-stocked uplands. They are planting them at a rate of about 2,500 acres per year.

This planting rate should be greatly increased.

If these lands, to which the State holds the title but which are managed by the counties, are to be planted and returned to productivity at a rate commensurate with their acreage, *the State will have to provide the additional funds needed.*

All other forest land owners should be vigorously pushing forest planting upon their non-stocked uplands.

Swamplands

Out of an original area of 4.8 million acres of swampland stocked with commercial forest, some 57% had become non-stocked by 1953. Between 1936 and 1953 this non-stocked area grew at a rate of about 50,000 acres a year. Since 1953 this non-stocked area must have grown very appreciably, perhaps to a present total of more than 3 million acres. How to return these *non-stocked swamplands to productive status represents a tremendous and as yet unsolved problem.*

Since the State is a large owner of these lands, it should assume leadership in attempting to find a way to successfully reforest them. So far all attempts to work out a solution for this problem have met with failure. However, there must be a solution for it.

It should be made the subject of intensive research jointly by the Lake States Forest Experiment Station, the University of Minnesota and the Department of Conservation with the co-operation of the forest industries. We recommend that the 1963 Legislature provide the Division of Forestry with $20,000 annually during the next biennium to assist in initiating this project in complete co-operation with the Lake States Forest Experiment Station and the University. Since the Division of Forestry is not a research agency, it is recommended that they contract for this research with the Lake States Forest Experiment Station and/or the School of Forestry.

Nurseries

The State's nurseries must estimate 3 to 4 years in advance the kind and quantity of planting stock which the private buyers will take. In some years there will be unintentional overproduction of nursery stock that cannot be held over to the next planting season.

To utilize this stock, the Division of Forestry should have available to it the funds to cover the cost of planting such stock. These funds should be under the control of the Legislative Advisory Commission.

FOREST INDUSTRIES

$250 Million a Year

The value of products made from Minnesota-grown timber was about $250 million in 1961, which makes the forest products industry one of the State's largest. It provided full-time employment to about 15,000 persons and part-time employment to about 35,000 more.

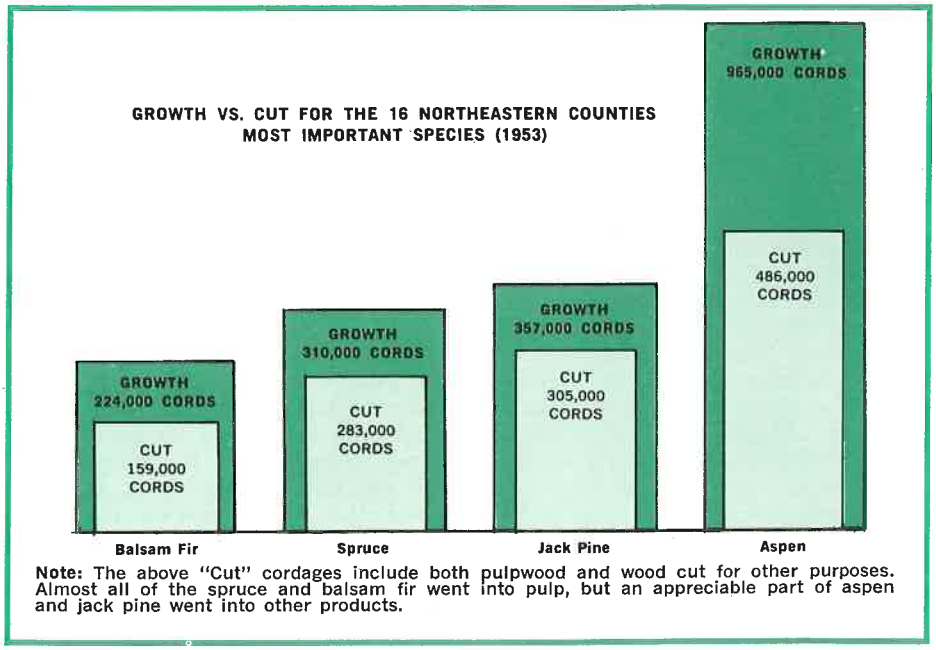
The pulp and paper industry is by far the most important segment of this industry. It uses about 710,000 cords of Minnesota-produced pulpwood and imported wood and wood pulp equivalent to about 350,000 cords. The imported material is mostly in the form of wood pulp of types presently not produced in Minnesota. It produces over 75% of the total income produced by the State's forest products industry. Its mills employ, as of 1960, nearly 9,000 persons at a wage cost, including fringe benefits, of about $58 million. It also pays about $11 million for the wood which it buys within the State. Attention will be concentrated on the problems of this industry, the more important of which follow.

Forest Land Ownership

This industry feels that it does not own enough forested land to properly protect its investment in plants. It now owns about 771,000 acres of such lands. This acreage equals only 4% of the State's total forest area, and 5% of the commercial forest area of the northeastern counties. Contrast this acreage with the 9.5 million acres or 66% of the commercial forest land in public ownership in the 16 northeastern counties. For the protection of its investment in plants and working capital it feels that it should acquire ownership of enough forested land to provide itself annually with about one-fourth to one-third of the wood which its mills require. To do so would require it to own about 1.1 million acres, or 330,000 more acres than it now owns. This land must be obtained from private owners, the counties and the State. Sales of such land by public agencies should be subject to the requirement that the purchaser agree to practice good forest management on these lands.

Taxation

Under the "tree growth" forest tax law, the forest owner pays annually a tax of 30% of the estimated value of the growth. Under this law a young jack pine stand many years from merchantability, and growing at the rate of .4 cords per acre per year, with stumpage at $2 per cord, would presently pay a tax of $.24 per acre ($.4 \times \$2 \times .30 = \$.24$). This tax is a gross income tax levied not on the actual income received from the crop but upon the current value of the sea-



Note: The above "Cut" cordages include both pulpwood and wood cut for other purposes. Almost all of the spruce and balsam fir went into pulp, but an appreciable part of aspen and jack pine went into other products.

Conifer seedlings: "Project 70" should be activated

son's growth, assuming it could be sold. However, it cannot be sold until the timber grows to merchantable size. This 30% rate is much higher than any other gross income tax rate paid in this State.

This rate should be reduced to 20%, with the State assisting the local taxing units with a ten-cent per acre grant-in-aid for all lands entered under this law.

Much wider use of both the "tree growth" and the "auxiliary forest" (not being discussed here) tax laws should be encouraged.

Forest owners should be provided with a greater opportunity to appeal and have reviewed adverse decisions connected with the use of these laws.

No industry is more discouraged by the personal property tax than is the forest products industry. Its operation requires expensive equipment together with large quantities of wood, other raw materials and finished products which it must have on hand to remain in business.

The same ratio, assessed value to "full and true" value, now authorized for agricultural equipment and inventories should be extended to the forest industries.

Industrial Expansion

The already established industries appear to be harvesting most of the recommended cut for the conifers but only a portion of that recommended for aspen and other hardwoods. These industries should be encouraged to expand their use of these hardwoods, particularly aspen.

New industries which can utilize the woods in surplus supply should be urged to establish themselves in this State by Department of Business Development and other public and private agencies interested in this problem.

Timber Sales Policies

There is need to evaluate the timber sale policies and procedures of public agencies. Since there appears to be dissatisfaction among the buyers of State-owned stumpage with the State's timber sale policies and procedures, it is believed that those policies should be evaluated.

Therefore it is recommended that the Governor appoint a committee representing the public, public agencies and the industry to study and develop a more satisfactory timber sale procedure.

ACCESS ROADS

How They Began

Following the end of railroad logging in Northeastern Minnesota the Division of Forestry found itself responsible for the protection and management of many hundreds of thousands of acres of "virgin timber," much of it over-mature, with no way of putting it on the market unless access roads suitable for use by logging trucks were provided. Also such roads were needed to enable the State to properly protect these stands of timber from destruction or excessive damage from fire, insects and diseases. These roads were also of great importance to hundreds of small loggers living in the areas surrounding the stands of timber which were opened up to logging by them. Many of these small loggers would have had to move elsewhere if the stands of timber opened up by these roads had not been made available to them for purchase under "Section 1" sales. In addition these roads are used extensively by hunters and by other people seeking recreation away from the more heavily traveled roads.

As of 1962 there are about 1,150 miles of these access roads available to the Divisions of Forestry and of Game and Fish for carrying on of their managerial and protective duties, and to loggers, hunters and other recreationists.

Maintenance

Of the present mileage, approximately 875 miles is all-weather road and is receiving some, but not adequate, maintenance. Currently the rest of the mileage is not receiving any maintenance. The portion which is receiving maintenance is available for logging truck use only during the winter and during periods of dry weather at other times of the year.

Goals

The Department of Conservation's present goal is to secure enough funds to adequately maintain the 1,150 miles of road now in use; and in addition, by 1970, to construct approximately 300 miles of new road, and to reconstruct about 130 miles of the existing roads.

To carry out this program the 1963 session of the Legislature should provide the Division of Forestry with $65,000 for forest access road maintenance and $90,000 for reconstruction and new construction during each year of the 1963-1965 biennium. This Council strongly urges such action.

FOREST INVENTORY

Constant Change

The State's forests are constantly changing. These changes are brought about by man, chiefly through his logging operations, and by nature, through growth, including regeneration, on the one hand, and, on the other hand, by destruction caused by fire, insects, fungi, wildlife and other agencies.

Scheduling

Good management of the State's forest resources, both those in private and in public ownership, especially that portion located within the 16 northeastern counties where they are so important to the economy of the region, requires continuously accurate knowledge of the forest. Such knowledge can be maintained only by inventories of the forest resource repeated at predetermined intervals. It is the consensus of opinion among those connected with the management of these forests that these inventories should be repeated at ten-year intervals.

Aerial Photography

The accuracy of such an inventory can be greatly improved and its cost can be markedly reduced if the making of it is preceded by new aerial photography. In the carrying out of such a program the 16-county area should be divided into five approximately equal areas, one of which would be photographed during each successive biennium. This series should begin in 1963.

The cost of the photography needed to initiate this program during the 1963-1965 biennium will be about $30,000 of which the Agricultural Stabilization Committee will provide matching funds in the amount of about $13,000, making the actual cost of the first biennium's photography to the State about $17,000.

The Division of Forestry should take the leadership in organizing and carrying out this program. There should be close co-ordination between the Lake States Forest Experiment Station, the National Forest administrations, the Iron Range Resources and Rehabilitation Commission, the 16 northeastern counties and the Forest Survey Steering Committee who are active in the planning, timing and carrying out of this program. Prints of the resulting aerial photos should be available to all who wish them at cost.

This program should most emphatically be approved and the 1963 session of the Legislature should be urged to provide the State funds needed to activate it during the 1963-1965 biennium.

COUNTY FORESTRY

A Unique Situation

In Minnesota the title to real estate subject to the ad valorem tax, after any portion of that tax (for a specified year) has been delinquent for five years, forfeits to the State (Minn. Laws, 1927, c. 119; Minn. Laws 1935, c. 278; and amendments thereto). Since the counties and their governmental subdivisions are assigned by law 90% (20% to the town, 30% to the county and 40% to the school district) of the net income received from the sale of tax-forfeited land and/or timber, etc., found upon such land, the State has authorized (Minn. Laws 1935, c. 386, and amendments thereto) the county board of each county possessed of such tax-forfeited land to either retain and manage it or, subject to certain restrictions, to sell such lands at not less than their appraised value. Under these laws the counties are the managers and essentially the owners of more than four million acres of land of which 3,600,000 acres are commercial forest land, that is, land that is producing or capable of producing usable crops of wood. Currently tax-forfeitures are about equal to sales of tax-forfeited land.

Minnesota is unique in the proportion of its commercial forest lands, 20%, in county ownership and in the smallness, 4%, of such lands in forest industry ownership. Only one other state, Wisconsin, approaches Minnesota in the extent of its county ownership of forest lands. As of 1953 the area of commercial forest land in county ownership and that under management in this State is as follows:

COUNTY OWNED COMMERCIAL FOREST LAND[11]

(in acres, as of 1953)

	Acres
Area not under forest management	899,000
Area under forest management	2,730,000
Total area in county ownership	3,629,000

During the 1955-1959 inclusive period tax-forfeitures within the managed area exceeded the sales of tax-title lands by about 6,500 acres per year. Adding this excess of tax-forfeiture over tax sales to the above listed area of managed county forest lands will bring the total 1960 area of such lands to about 2,775,000 acres. The accomplishments of the 11 counties which own these lands and have set up county land departments to manage them are shown in the table.

[11]Dana, S. T., Minnesota Lands, Appendix I, Table 2. Percents converted into acres. Counties in which lands are under forest management are Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Itasca, Koochiching, Pine, St. Louis and Wadena (11 in all).

FOREST LAND MANAGEMENT RECORD[12]
Per year average for 1955-1959 inclusive
(Based upon data furnished by 11 counties)

Number of timber sales	1,816
Total volume of timber sold, converted into cords of which 125,338 cords were pulpwood	150,777
Average size of sale, converted into cords	80.6
Total timber sale income per year	$327,541.00
Average size of sale, in dollars	$ 180.36
Income from land rentals, hay sales, etc.	$ 8,838.00
Total land management income	$335,879.00
Forest property management cost (Est.)	$153,495.00
Net income from forest land management (Est.)	$182,384.00
Per acre net income, commercial forest land (Est.)	6.7 cents
Per acre net income, stocked forest land (Est.)	10.7 cents

By making a relatively large number of small sales rather than a smaller number of larger ones, these counties have distributed the work income connected

[12]"Report of the Legislative Interim Commission on Forest Resources and Forest Ownership", January, 1961, pp. 35 and 36, plus reports received directly from the 16 counties.

Aspen vs. beaver: the market is limited

with the logging of the stumpage sold among a considerably larger number of families than would otherwise be the case.

From whatever angle viewed the management of 2.75 million acres of forest land which is producing a gross income of $335,879, equal to 12.1¢ per acre, per year, and net income of approximately $182,384, equal to 6.7¢ per acre, is a large, and – to these counties – an important undertaking. The proper management of these lands involves several problems.

Salaries

The salaries offered are too low to attract the kind of foresters the counties need to carry on their forestry work. Only four county land department men receive salaries in excess of $6,100. Of the 14 foresters working in county land departments on county lands, ten are on the Iron Range Resources and Rehabilitation payroll. The counties feel too poor to take on these ten men.

If the counties having land departments are themselves to properly manage their forest lands without State aid, they must offer such salaries and job security as will attract competent foresters.

New Industries

Each of the counties wants a major forest industry established within its boundaries. Only low grade hardwoods, especially aspen, are available in sufficient quantities to attract such industries. And as yet the market for the products into which these woods can be converted is very limited. Because of this, it is not likely that a major forest industry can be located in each county. The conifers in quantities sufficient to attract the industries desired are lacking.

Reforestation

As of 1953, these counties owned nearly a million acres of non- or poorly stocked forest lands, over half of which were swamplands. The counties are reforesting the most easily plantable of these lands at a rate of less than 2,500 acres a year.

This planting program should be greatly expanded. Such an expansion will require State aid.

Tax-forfeited Lands

All the counties are willing to sell nonconifer lands whenever an opportunity arises to do so, but those with land departments are often unwilling to sell lands if stocked with conifers. These conifer-covered lands are the ones industry wants.

We recommend that counties offer such lands for sale under proper safeguards.

Zoning

During the decade ending about 1945 county committees aided by the University of Minnesota's Agricultural Extension Service and the U. S. Department of Agriculture's Bureau of Agricultural Economics studied rural land use and public expenditures connected therewith in each of the 16 northeastern counties. The purpose of these studies was to determine what rural lands in these counties could be used by agriculture without putting an excessive burden upon the local tax base for road and school services, and, by county board action, to bring about the zoning against year-'round human occupancy of such lands, especially tax-forfeited lands, as would place an excessive tax burden upon the local tax base. These rural land use studies resulted in the permanent zoning against settlement of large acreages of land in these 16 counties.

But not all of the areas that should have been zoned against settlement were so zoned. Also changing conditions are making advisable a re-study of the whole rural zoning situation within these counties.

IRR&R

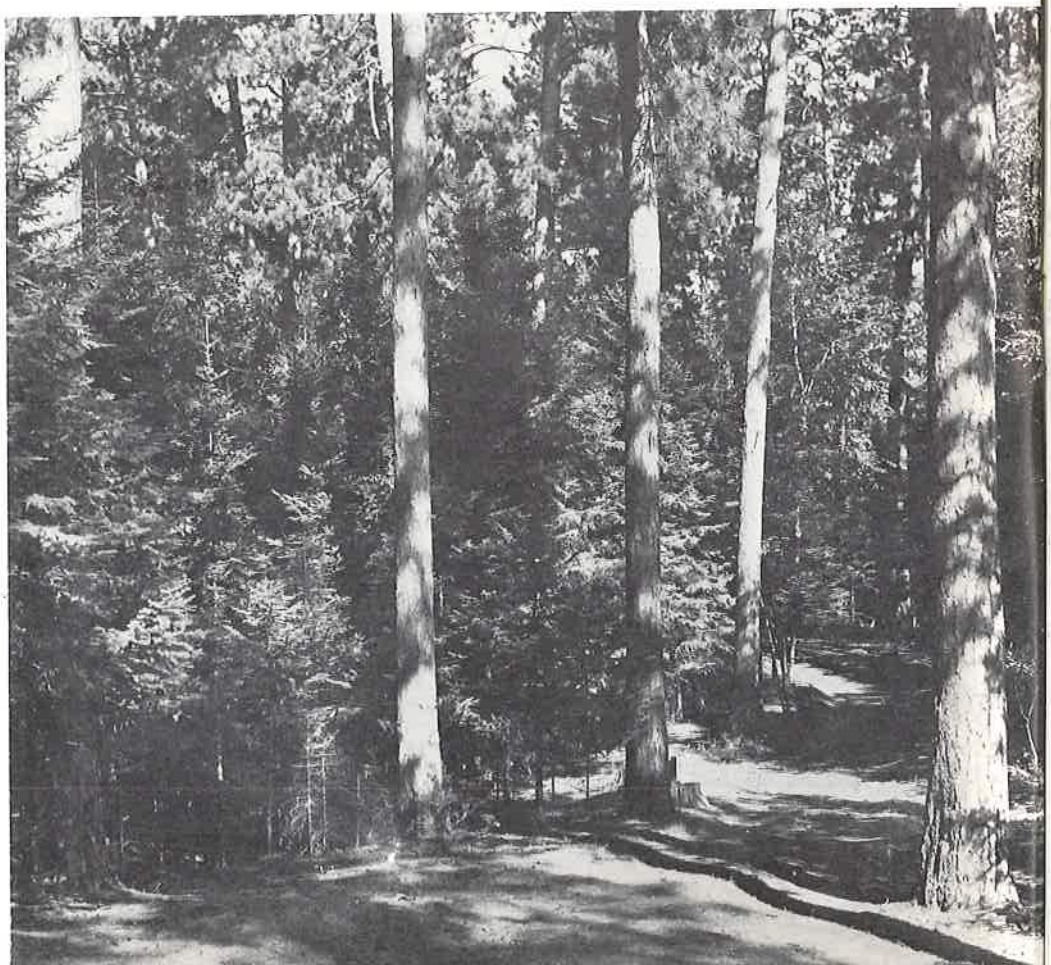
During the 1930's and on into the first two years of the 1940's, there was large and persistent unemployment in the Iron Range areas. Iron Range Resources and Rehabilitation was created in 1941 by M.S.A. Sec. 298.22 "to promote vocational training, develop low grade iron ore, expand tourist facilities and attractions, develop farming, promote a long range forestry program in the 16 cutover counties, promote processing of wood products, establish paper mills, develop peat and other natural resources in the stricken areas, and to generally develop a program of rehabilitating the people in the areas affected."[13] To finance its activities, it is assigned 5% of the occupation tax on iron ores.

IRR&R became a major factor in the development of forestry upon the county tax-forfeited lands with the creation, early in 1947, of its Forestry Projects Section and the initiation of its "Forest Survey" of the 16 northeastern counties. By fiscal 1950 it was spending about $80,000 on this project. This "Survey" ultimately covered the whole State. By fiscal 1958 IRR&R was spending about $225,000 on its forestry projects. Since then these expenditures have been materially reduced.

Currently, with a technical staff consisting of 20 foresters and two timber appraisers, it is providing the counties having land management departments with a large amount of technical assist-

[13]Iron Range Resources and Rehabilitation, Report to the Governor and the Legislature for the Twenty-second Biennium, July 1, 1948 to July 1, 1950, Edward G. Bayuk.

A walk in the woods: the counties feel poor



Merry Christmas trees: forestry is vital to Minnesota's economy

ance in the management of their county forests and forest lands. It is also making a re-survey of the State's forest resources, using not only its own data but also data obtained from State, Federal and private agencies. In connection with this project it has established some 6,000 "continuous forest inventory" plots which are being re-measured at regular intervals. To assist in setting up a northeastern county land use program it is making an inventory of all of the tax-forfeited lands within their boundaries. Furthermore it is assisting these counties with their forest tree-planting operations and in the re-establishment of hundreds of lost section corners.

Iron Range Resources and Rehabilitation has made very valuable contributions to the practice of forestry in this State. It is very important that most of the types of forestry work which it is now carrying on be continued.

If the income from the "occupation tax" shrinks to the point where it will become necessary for the IRR&R to severely reduce its "forestry projects" activities, this program should be transferred to the Department of Conservation, and appropriated funds should be provided that Department to insure the continuation of this important work.

EDUCATION

Stepped-up Program Needed

Forests and forestry are vital to the economy and well-being of Minnesota.

To assure that this fact is fully understood and supported by the people of the State, a stepped-up public education program is recommended.

Elementary Schools

Currently, this State's elementary curricula quite generally include a course in science and conservation in which some attention is given to the importance to the community of conserving its natural resources. A good subject coverage

outline, including ample lists of reference material,[14] is available to the teachers. The effectiveness of this coverage depends, to a very considerable degree, upon the interest and training of the teacher.

Secondary Schools

When we come to the secondary schools we encounter a markedly different situation. While many educators believe that the conservation of our forests and other natural resources is of such vital importance that *all high school pupils* should have the opportunity to learn about its problems and become active in solving them, the present academic requirements so fully use the time available for class scheduling that no place can be found for a separate course dealing with this field and its problems. "Sputnik", through the public pressure which it engendered for the inclusion of more mathematics and science (especially chemistry and physics) in their curricula, has made this situation worse. However, since only about 25% of our high school students are mentally capable of successfully carrying these intensified mathematics and science courses, the high schools are finding it necessary to include in their curricula a general science course less difficult for their students to comprehend. In some high schools considerable coverage of conservation is being included in this course. In others an attempt is being made to provide a separate course in this subject.

Teacher Training

In both of these situations the high schools immediately come up against another problem, that of lack of teachers sufficiently familiar with natural resource conservation to give it proper coverage in their classrooms. Teachers could probably acquire the needed familiarity with this field by combining attendance at conservation workshops such as those offered each summer by some of the State colleges, and through the use of the conservation "Guide"[15] which has been prepared by the Minnesota Department of Education.

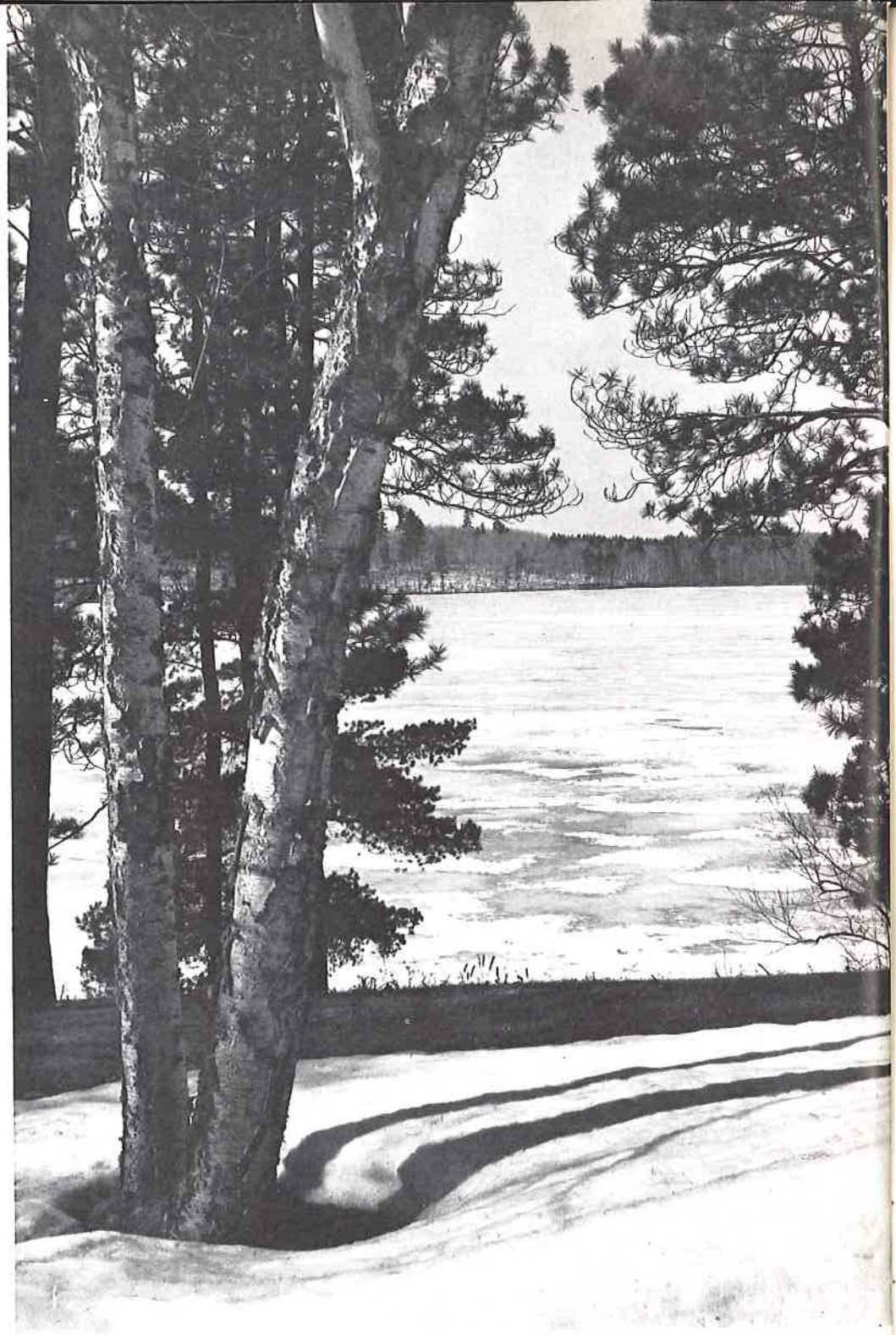
Conservation of natural resources workshops should be expanded and offered by more educational institutions.

School officials feel that teacher interest in the coverage of natural resource conservation would be greatly stimulated by offering teachers interested in this field full or partial coverage of the expenses which they would incur if they attended such workshops.

Hence it is recommended that a concerted effort be made to interest foundations, agencies and individuals in providing assistance to teachers who wish to attend conservation workshops.

The rapidly growing urbanization of our people, and their ever growing separation from the natural resources which are so important to the longer term welfare, make adequate education in the natural resource field a must. The appointment of a small committee of individuals conversant with the present situation and needs in the field of natural resource conservation education is very important to the future welfare of the people of this State.

The Governor should appoint such a committee with instructions to study the whole field of conservation education and prepare a set of recommendations for future guidance and action.



Winter wonderland: our people are being separated

[14]See "A Guide for Instruction in Science and Conservation", for Elementary School Grades 1-8, Curriculum Bulletin No. 7, State of Minnesota Department of Education St. Paul, 1951. pp. 158.

[15]"A Guide for Relating Conservation to Other Areas of Instruction", Secondary School Grades 7-12, Curriculum Bulletin No. 23, State of Minnesota Department of Education, St. Paul. 1958. pp. 236.

MINERALS

THE NEW ERA

Opportunities

Minnesota is one of the important mineral-producing areas of the world. Total shipments of iron ore have exceeded 2½ billion tons, providing the State and local communities with a direct employment of around 17,000 persons a year and a tax income of $1¼ billion to date. Annual tax income to the State and local communities is currently about $50 million.

The higher grade reserves served the Nation through two critical wars but are now nearing exhaustion. The future lies in the development of the vast taconite* reserves, adequate to last 150 years or more even if producing at a projected rate of 60 million tons of pellets annually. To realize the full potential growth of this fledgling taconite industry, both the mining companies and the State must overcome difficult competition — particularly from Canada, Michigan, Missouri.

The compelling factor guiding the Council in this study and in making its recommendations has been that of providing new year-'round job opportunities. It seems clear that such an approach far outweighs any short-term gain based on immediate tax incomes, or on any other factor. A comparison of labor cost per ton of open pit natural ores and taconite concentrates, using $3.50 per man-hour for both, computed from data in the Annual Reports of the Inspectors of Mines, demonstrates that the labor cost per ton of taconite product is more than $1.50 greater than for natural ore products. Thus the total of taxes and labor costs paid by taconite in Minnesota is more than 50¢ per ton greater than for natural ores. The projected goal by 1990 of 60 million tons of pellets annually could mean a total capital investment of $2 billion in the Minnesota taconite industry, assuring the direct employment in iron ore mining at a level of some 25,000 people with a normal payroll of $150 million at present wage rates. Furthermore, studies have shown that several tens of thousands of additional jobs are developed simultaneously in associated or service industries.

*For some definitions of "Iron Language," see page 61.

TASK FORCE

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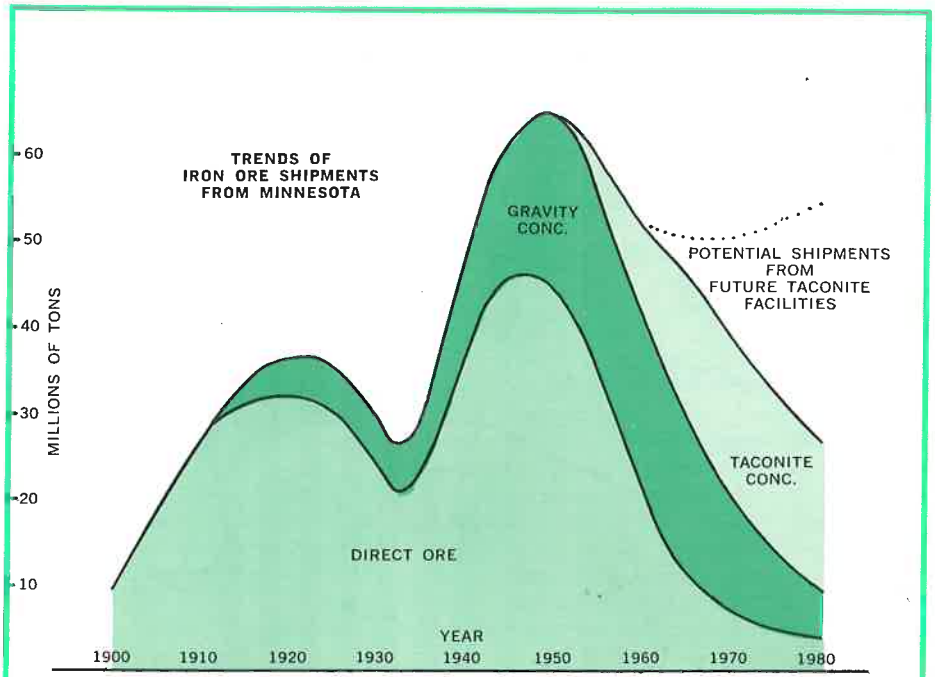


This chart indicates a continued decline of annual shipments of direct ore and a somewhat slower decline of gravity concentrate. Present magnetic taconite facilities, including the expansions now under construction, can add a considerable tonnage to the total, but will not prevent a rapid decline in total Minnesota shipments. The obvious cure for this declining trend of Minnesota iron ore shipments is the construction of additional taconite facilities. — H. H. Wade, 1962.

The status of Minnesota as an iron ore-producing State shifted during the decade of 1950-60 from that of a monopoly to one of growing competition. A world search for ore uncovered immense deposits of high grade materials, often located near sea lanes with relatively cheap transportation to the new steel plants being built near U. S. ocean ports. The development of these properties had the effect of shrinking the market of Lake Superior ores, even to the exclusion of some of the requirements of the Pittsburgh area. Demands of the blast furnace for better grade and structure compounded the difficulties, and much of the reserves had to be downgraded in classification. As a consequence, the reserves of "natural ores" are of about ten years or less duration. A relatively fixed tax base, coupled with diminishing production, rising wages and lowering prices has forced additional dilemmas. Thus, the industry is in transition. Many changes must be made in the coming decade, and the future depends on the manner in which each dependent group — the industry, the State and the communities — measures up to the problem. The iron mining industry of Minnesota faces a new era, and it is struggling to adapt itself to the new conditions.

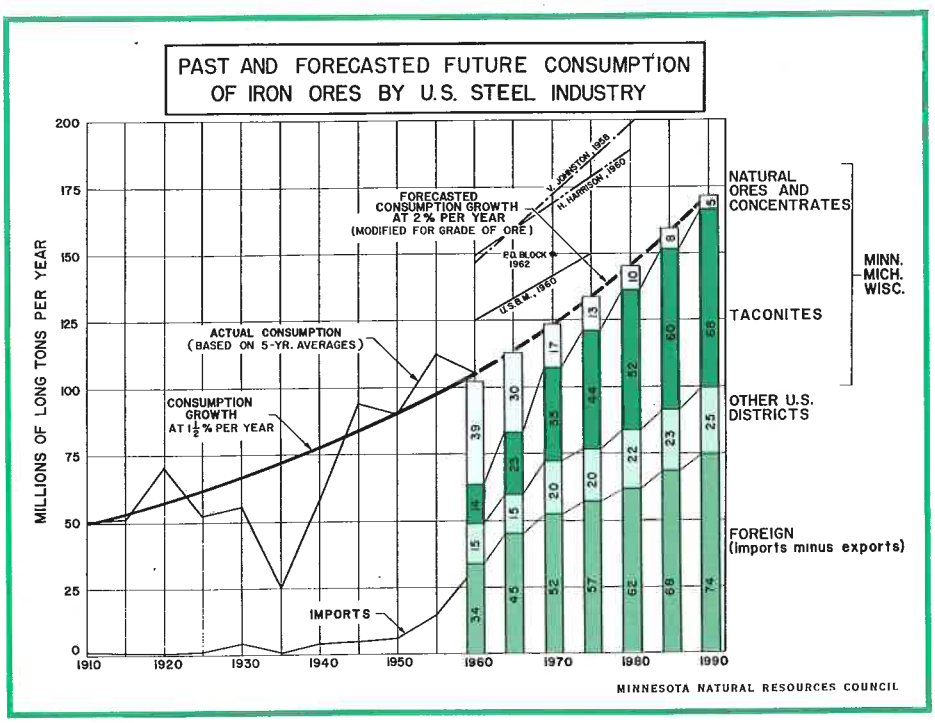
Various prognostications have been made as to the future potential of the growing taconite operations. Iron ore consumption in the United States for the 50-year period from 1910 to 1960 showed an annual growth rate of 1½%. Considering our population increase, it would seem that this rate could be placed at 2% over the next quarter-century. Some economists have used 3%. Based on a 2% growth, and 105 million tons of ore consumption for 1960, the following estimates in tons are projected:

Year	Minn.-Mich.-Wisc. Taconites	Foreign
1960	14,000,000	34,000,000
1970	35,000,000	52,000,000
1980	52,000,000	62,000,000
1990	68,000,000	74,000,000

(See chart on next page.)

The challenge for Minnesota is to attract some 50 to 60 million tons of annual plant capacity by 1990. It is distinctly possible.

Our State is blessed also with large resources of the so-called industrial minerals, including sand and gravels, clays, limestone, building stone and marl. The use of these is increasing and a determined program of geological investigation, marketing research and business development could result in considerable future expansion. Our reserves of peat are the largest in the United States, and with continued encouragement a sizeable business could result from its horticultural and chemical uses. Sizeable deposits of titanium, copper and nickel ores have been indicated in the northeastern part of



the State. It is hoped that these materials might some day be mined on a commercial basis.

So the opportunity exists in Minnesota for a growing mineral industry. But the people, through their government, must provide the incentive.

History of Iron Ore Industry

In the early 1900's rapid development of iron ore resources enabled Minnesota to become the principal source of iron ore in the United States. As the tremendous expansion in the Nation's industry occurred, the mines of the Mesabi Range provided the ever-increasing bulk of iron ore. Minnesota mines were ready to meet the enlarged requirements brought on by World War I and World War II. Through all of this period Minnesota was a "king" reigning over its iron ore monopoly. Where else were there available such high-grade reserves backed by technological experience, a trained labor force, and ready transportation? Much of the increase in production was coupled with improved equipment and production methods. Passing time saw steam shovels replaced by electric shovels, and "dinkey" engines give way to steam locomotives and, later, diesel electrics. Trucks were introduced where rail was not practical.

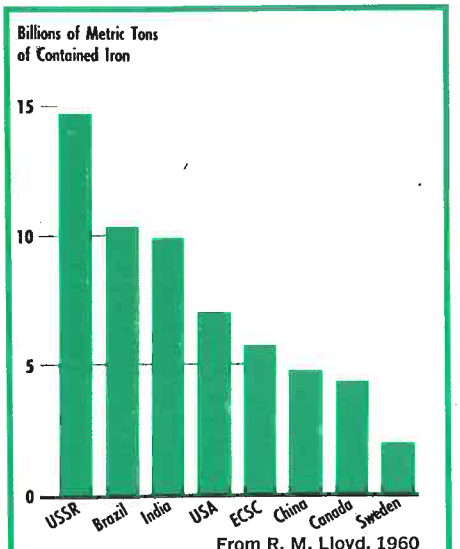
In 1916 a portent of the iron ore industry's future appeared with the building in Duluth of a 100-ton per day experimental plant for treating taconite. In 1922 Mesabi Iron Company completed construction of a beneficiation plant, in Babbitt, based on processes developed in the experimental plant. After several years this plant was closed, as it was unable to compete with the direct shipping ores. In 1941 the Taconite Tax Law was passed, limiting the amount of ad valorem tax that could be assessed against taconite land and mining facilities, and assessing a special production tax in its place. Interest in low-grade ore had been rising since the early 1930's, and by 1942 experimental work was being carried on by the Mines Experiment Station, Reserve Mining and Erie Mining. During the following years many problems had to be overcome. The conventional methods of drilling were not practical due to the extreme hardness of taconite. The handling methods were complex since three tons of crude taconite are treated for every ton of product. Power and water needs were enormous. These and numerous other difficulties were surmounted in the laboratories and pilot plants. Research carried out through the University of Minnesota was particularly important in this technological development. In 1961 the relatively new taconite industry shipped 14,352,018 tons of ore, or 32.1% of the total Minnesota shipments. During the same period direct shipping tonnages dropped to 12,635,305 tons, some 1,716,713 tons less than that of the taconite industry.

The last decade has seen a number of changes within the iron ore industry. The United States has become the world's largest importer of iron ore. The St. Lawrence Seaway was completed, and is a factor in the competitive position of Minnesota ores. There have been a number of heavy media concentrating plants built in Minnesota. The 1959 Legislature passed the Semi-taconite Law which accorded to partially altered taconite ores the same tax treatment as given taconite.

The Developing Forces

Today, throughout the industrial world and particularly evidenced in the steel and iron ore industry, there is a developing competition. Minnesota feels this competition through its effect on the iron ore industry. The steel company must compete, and in doing so must produce at lowest possible cost. The U. S. company has to face higher wage rates and transportation costs. If it is to compete, it must continue to increase productivity. The companies have not been idle. Research has demonstrated that ore structure is an important factor in the efficiency of a blast furnace. Today the steel company wants a charge with good structure, low silica content and high iron content. At present pellets receive a premium of approximately $1.50 per ton over comparable grade of regular Mesabi ore. It is generally believed that pellet structure is worth $3 or more, due to increased blast furnace productivity.

As the expansion of the steel industry continued after World War II, the steel companies became concerned about their source of iron ore. High-grade ore from Minnesota was being depleted. There were two possible solutions. One of these was to work in favor of Minnesota; namely the utilization of low-grade reserves. A second solution was the search for new high-grade reserves elsewhere. With the aid of modern exploration methods, and in the light of previously known occurrences of iron-bearing rock, it was not long before billions of tons of new



MAJOR WORLD RESOURCES OF IRON ORE

Here you see the relative distribution of iron ore reserves in the major producing countries of the world. None of them has a large enough percentage of the total reserves to hold a monopoly.

reserves were being developed. In many instances these reserves were in a better competitive position than the remaining Minnesota ores. Although in many cases these ores were at greater distances from the market area, they had cheap ocean transportation. They were of higher iron content and were lower in silica content.

In summary, the existing economic forces soon changed the iron ore industry from that of a Minnesota monopoly to one of tough competition. This competition, along with the depletion of our higher-grade reserves, is the problem that Minnesota's iron ore industry faces.

Minnesota's Position

Let us now examine Minnesota's position in the competitive iron ore industry. On the plus side we have a skilled labor force backed by technological progress. The industry has developed and is continuing to improve efficient beneficiation and mining methods and equipment. The State has known outlined reserves of taconite and other ore amenable to concentration. Many millions of dollars are already tied up in plants and properties in the State. The iron ore industry of Minnesota is a domestic industry. It is difficult to judge what effect this fact will have on National policy and on the industry's decisions to go abroad for ore. Finally, it appears that, at long last, the people of the State are becoming aware of the problems of the industry.

On the minus side we find that Minnesota ore competes with other reserves of much better initial chemical composition. Most foreign ores require less treatment to put them on a comparable market basis in terms of structure as well as chemical composition. Wage rates and taxes are often less than those in Minnesota. Then, too, all of the developed technology is not only available to Minnesota industry, but is readily available for use anywhere in the world.

The only conclusion possible is that Minnesota has a tough fight to meet both price and quality requirements.

Status of Other Minerals

Minnesota has been so fortunate in possessing its titan iron ore industry that very little has been done to develop its other mineral potential, such as copper and nickel, limestone and marl, clay and shale, sand and gravel, building and monumental stone and other minerals. All of these minerals and rock are known to occur in Minnesota. The simple facts are that basic research into the chemical and physical properties of these resources and into their processing and utilization is needed. In addition, the potential reserves of the minerals other than iron ore have not been clearly outlined by detailed geologic mapping. If Minnesota is to take advantage of these natural resources, steps must be taken to encourage private companies in the developing and financing of new plants.

Minnesota has approximately 2,300,000 acres of land under the administrative authority of the Division of Lands and Minerals, and is the single largest owner of mineral lands within the State. From the time of the first shipment of State-owned ore in 1893, until June 30, 1960, a total of 356 million tons of royalty ore has been shipped from the State-owned properties. To date the total royalties paid into the State amount to over $121 million. During the two-year period ending June 30, 1960, the royalty received from the sale of iron ore and other minerals was $6,389,621, involving 32 State-owned mining properties under production. Twenty-seven units were regular mines, two were stockpile units, one was a lake-bed mine and two were taconite operations. These figures show the importance of State-owned mineral rights.

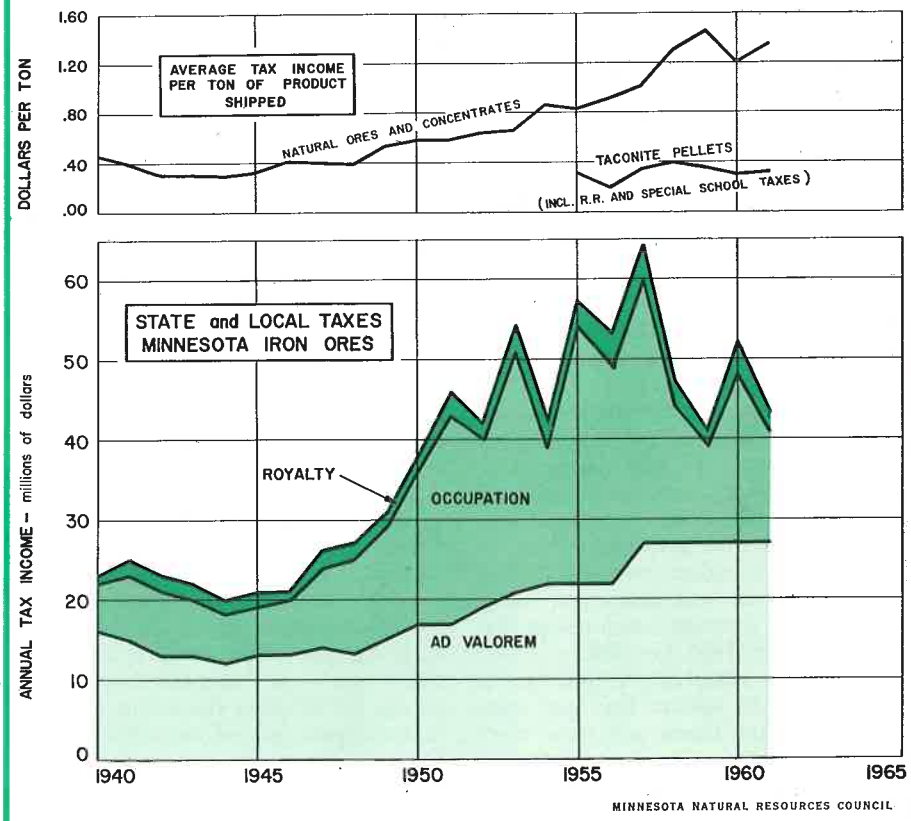
Impact on Minnesota Economy

What is the impact of the mineral industry on the economy of the State? That the impact is a significant one is evidenced by the recent attention being focused on the iron ore industry. Iron ore shipments account for more than 90% of the value produced by Minnesota's mineral industries. In 1960, the value of Minnesota mineral production was over $500 million.

Let us consider the importance of the iron ore industry, which is a key factor in the State employment picture due to its geographic concentration. The economy of Crow Wing, Itasca and St. Louis counties is directly tied to it. Iron mining operations have contributed $1¼ billions in local, county and State taxes to date. The Iron Range school systems and the University of Minnesota are outstanding examples of the benefits accrued from iron mining taxation and royalties.

The chart, "State and Local Taxes," illustrates how tax income has fallen from $63 million to about $45 million annually in the last five years, although local community income has remained constant at $27-$28 million. In view of the rapidly declining ore production, average tax cost for natural ores and concentrates rose to $1.36 during 1961.

In addition to taxes paid and direct employment, the iron ore industry has an indirect impact on the economy. The indirect employment created through



This chart shows the effect on taxes as less tonnage of natural ore is mined. The revenue from taxation has not lowered the same percentage as the tonnage, and the result is an increasing burden of taxation on the natural ores. Total local and State taxes, nearing $1.50 per ton, are seriously hurting the economic position of these ores.

purchase of services and goods by the companies and their employees is but one of the considerations. The list might be extended on and on to include, for example, the effect of added railroad employment, construction jobs and the influx of capital to the State.

Supply and Demand

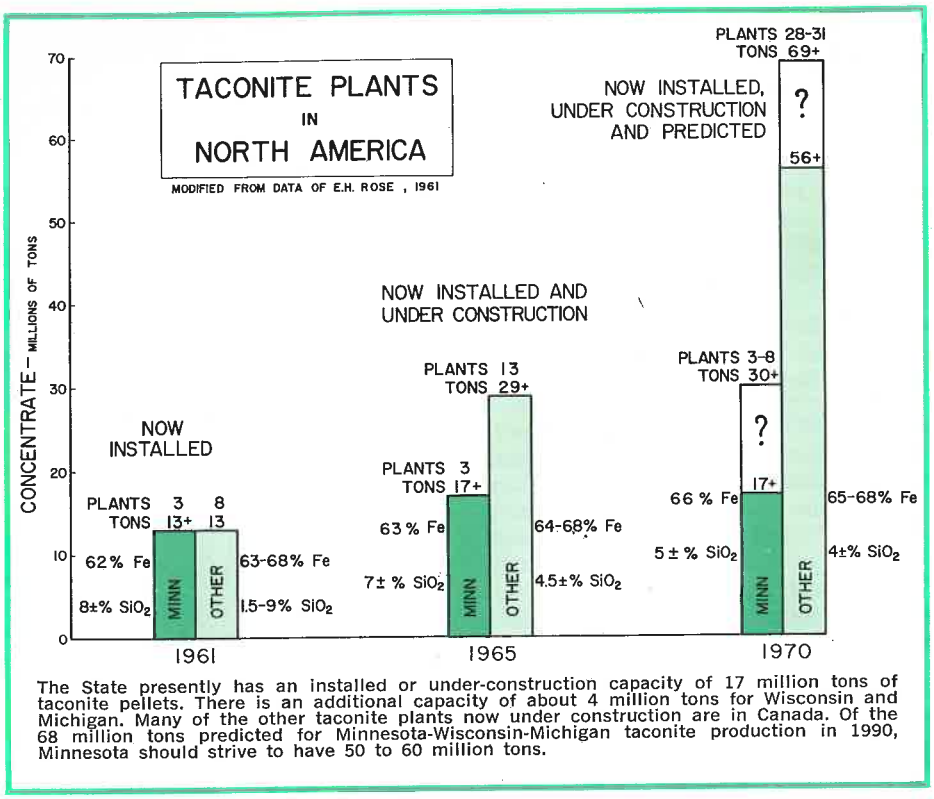
The past ten years have seen a striking change in the pattern of iron ore supply. The Lake Superior district, which previously supplied over 80% of the national market for iron ore, now supplies less than 55%. The chart, "Trends of Iron Ore Shipments" (page 49), part of a presentation by H. H. Wade at the 1962 annual Mining Symposium of the University of Minnesota, shows past and predicted production of Minnesota iron ore.

During recent years there has been a growth in the markets for materials which are alternates to steel. Plastics, aluminum and cement have invaded the steel market. Another factor affecting the tonnage of steel used is the continuing improvement in steel itself. The improved high-strength steel means that fewer tons are required to serve the same purpose. Furthermore, the rise in average iron content of ore shipments from approximately 56% in 1961 to a future average approaching 62% will mean that future tonnage may be cut to 91% of that predicted in terms of today's grade.

The chart, "Consumption of Iron Ores" (page 50), shows that consumption of the past 50 years has risen an average of 1½% per year. It is interesting to note that the growth viewed from 1935, at the base of a depression, through World War II indicates a much larger percentage rise. The future demand was developed using a 2% growth rate, modified for grade of ore. This rate seems justified in view of the considerations previously mentioned. The figures developed are actual average requirements, not maximum capacities.

Several other forecasts are shown on the chart for the purpose of comparison. The U. S. Bureau of Mines forecast is based on estimated requirements, and would indicate about an equivalent growth rate with the principal difference being due to a higher base point. The Council's forecast was developed using as a base the average consumption for the period from 1955 to 1960.

By 1975 consumption of iron ore is estimated at 135 million tons per year, and by 1990 the figure will have risen to 172 million tons. The future requirements will be supplied by increasing imports and by the utilization of lower-grade domestic ore. The allocation depicted in the chart as to source of future supply is based on several factors. The ultimate choice will be made on the basis



The State presently has an installed or under-construction capacity of 17 million tons of taconite pellets. There is an additional capacity of about 4 million tons for Wisconsin and Michigan. Many of the other taconite plants now under construction are in Canada. Of the 68 million tons predicted for Minnesota-Wisconsin-Michigan taconite production in 1990, Minnesota should strive to have 50 to 60 million tons.

of ore quality, delivered cost, investment environment, national security and political climate. The Lake Superior Region will see a rapid decline in the production of natural ores and a steady rise in taconite utilization. Minnesota must have as its aim the major part in the production of these taconites.

Minnesota natural ore reserves have declined rapidly the last ten years. The decline, illustrated by the chart, "Taxable Reserves" (opposite page), is due to two principal factors. First: ores are being physically depleted. Second: they are being reclassified because of rising standards. The problem of rising standards will be discussed in a later part of this report.

Fortunately, Minnesota has vast reserves of taconite available by open pit mining – sufficient to produce five or more billion tons of pellets. In addition, there are enormous reserves available by underground mining.

Iron ore imports during the coming year will originate primarily in Canada and in South America because of the size of reserves available, as well as the other factors mentioned earlier. Canadian imports are expected to more than double by 1970 as the result of capital expenditures planned and already made. Much of the Canadian production will result from up-grading lower-grade material. One important consideration bearing on future imports is the emergence of European Common Market, Japanese and Latin American steel producers as bidders for iron ore.

General Economics

Let us now examine the comparative economics of Minnesota iron ore. In the case of high-grade, direct-shipping ore, the costs which have the more significant effect are those of labor, transportation and taxes. The cost of production in Minnesota has shown a rise of about 110% since 1950. The labor cost of foreign operations is much less, since the low labor rates per hour more than offset any differences in productivity. Weekly earnings of employees in the Minnesota iron mining industry have risen much more than those of manufacturing employees. Transportation costs are also more favorable to foreign ore.

Pricing of ore has been based, for the most part, on chemical composition. Productivity can be improved greatly by using a blast furnace burden with good structure. In the future it is likely that there will be a widening gap between the price of direct-shipping ore and that of pellets and other ore of good structure. The lower price of direct-shipping ore, coupled with high labor and transportation costs will seriously curtail the sale of Minnesota direct-shipping ore.

Beneficiated ore is affected differently. The labor costs are not so important when compared to cost differences introduced by concentrating characteristics. If one admits that pricing and marketing conditions will require the offering of a high-grade, good structure product, then these physical characteristics become

quite significant. Minnesota taconites are extremely hard, and require very fine grinding to separate the merchantable iron-bearing particles from the gangue material. The actual concentrating process is very complex and requires many steps. On the other hand, much of the Canadian material breaks down easily, and separates at a much coarser size than Minnesota taconite. The concentrating process is simpler than that for Minnesota ores. Similar tonnages of pellets can be produced from less tons of Canadian crude than from Minnesota crude. It is not hard to see why these ores can have a cost advantage over those of Minnesota.

Another difference in the cost structure of beneficiated ore is the high interest charge and capital write-off due to the amount of capital investment needed for construction of a beneficiation plant.

MINERAL RESERVES

Reclassification

Iron ore valuation for ad valorem tax purposes is made on the basis of chemical composition and physical structure. The categories or groupings of ore are also dependent on mining method and beneficiation required. For example, a direct-shipping ore is one that requires no beneficiation. Other types include wash ore, heavy media ore, taconites.

As a result of the changing technology, such material, once direct-shipping ore, now requires beneficiation to put it in a marketable condition. There is a loss in tonnage which accompanies beneficiation and a loss in valuation due to increased treatment cost. Much of this material is still held on the tax rolls at a high valuation and must be reclassified. The reclassification will result in a decrease in tonnage and value per ton as carried on tax rolls. The same situation holds true for wash ores and retreat ores which now must be beneficiated to a further degree than in the past. The trend toward reclassification has already appeared.

The listed iron ore reserves of the State have fallen from one billion to one-half billion tons in the last 15 years. By subtracting the major portion of the underground ores, which cannot be mined economically today, the figure is closer to 400 million tons. Of equal significance, much of this open pit ore cannot meet market specifications and must be reclassified to semi-taconite. The life of the so-called "natural ores" are thus about ten years, even considering a falling rate of production. These higher-grade reserves can be uesd to carry the industry through a transition period until full taconite production is achieved. Current plants must be supplemented by fine grinding, special concentration methods and agglomeration of the final product. Large capital investments will be required, and incentives should be given to utilize such ores.

Many of the 70 or more concentration plants currently operating along the ranges are outdated. Fine grinding, magnetic roasting or flotation and agglomeration units must be added to produce an acceptable product. Such investments in "going" mines can serve to carry the industry through a transition period in translating from the natural ores to stimulate the taconites, and thence to full taconite operations. In order to stimulate necessary research and plant investment, additional monies must be provided and every encouragement given to long-range planning by the ore companies.

A considerable portion of the former direct-shipping ores are now, in effect, concentrating ores, and the previously termed "intermediate ores" are semi-taconites. The public and local authorities must understand the reason and need for re-classification. The effect of this change will be to reduce the ad valorem, occupation and royalty taxes on properties once they go into operation; hence the incentive to expend the necessary capital investments to achieve this end. Without such incentive many of these properties are being and will continue to be dropped from tax rolls, in which case tax loss will be much greater.

The State should expedite a re-classification of the so-called "natural ores" wherever justified, and specifically upon submittal of metallurgical test data, a proposed flow sheet for necessary additional facilities, and upon evidence of definite plans to build the additions. The Semi-taconite Law provides the vehicle.

Mineral Development

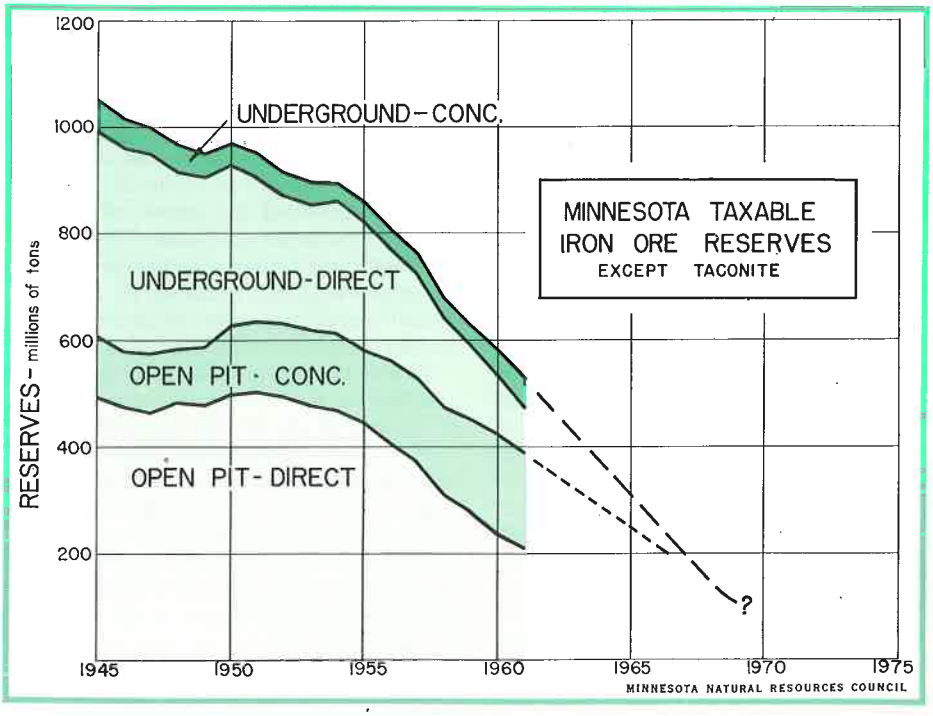
In order for the State to assist actively and intelligently in the development of the taconites, it is important that more be known about their location, the quantities and especially their characteristics. The same is true for other mineral resources: clays, limestones, glass sand, manganese, copper, nickel and titanium. An accelerated program of geological investigation and ore testing is essential.

The Minnesota Geological Survey should be expanded so that it can resume a strong position in developing the mineral resources of the State. Emphasis is needed in geologic mapping, supplemented by geophysical investigations. The survey should serve as a central collection agency for geologic data recovered in exploratory drilling.

Taconite Exploration

For many years the geologists and mining engineers of Minnesota have conjectured as to what the Mesabi iron formation is like in depth. Is the iron in magnetic form? Is the grade high enough to give low ratios of concentration and hence low milling costs? Are the rocks stable enough to support low-cost, high-volume mining by large underground quarrying methods?

If these probabilities were verified, long-range planning could be established so as to utilize the tremendous reserve potential. Underground mining of low-grade magnetic ores is already a



reality in Missouri, and plans are progressing for another property in Canada. Companies that are not in the favorable position of controlling adequate reserves of near-surface taconite could acquire large blocks of selected, high-grade underground deposits, and develop methods for exploitation.

This might seem to be a dream, but so was taconite development in 1910. The pioneers of 50 years ago had vision. Do we have less vision today, in the age of lunar exploring and space shots? Or must all of our aspirations and research be directed toward outer space — at far greater costs?

The State should drill a series of ten deep holes on its lands along the southern edge of the Mesabi Range at locations so selected that the iron formation is encountered at depths of 600 to 1,000 feet. The cores should be studied closely by geologists to determine mineralogical characteristics, by mining engineers to determine underground mining characteristics and by metallurgical engineers for beneficiation results. Cost of the program is estimated at $100,000.

Publication of Data

Many other states have laws that require mandatory reporting of all drill hole information. This is particularly true for "oil states." The information is generally held as confidential for a certain period of time, and then freed for public use. In this way valuable data is not lost. Initially the oil companies opposed the idea, but ultimately they found that they benefited greatly by such pooling of information.

Pertinent information developed from exploration and development drill holes put down in the State should be reported to a specified State agency. These data should be held confidential for a period of five years, following which they would become public knowledge.

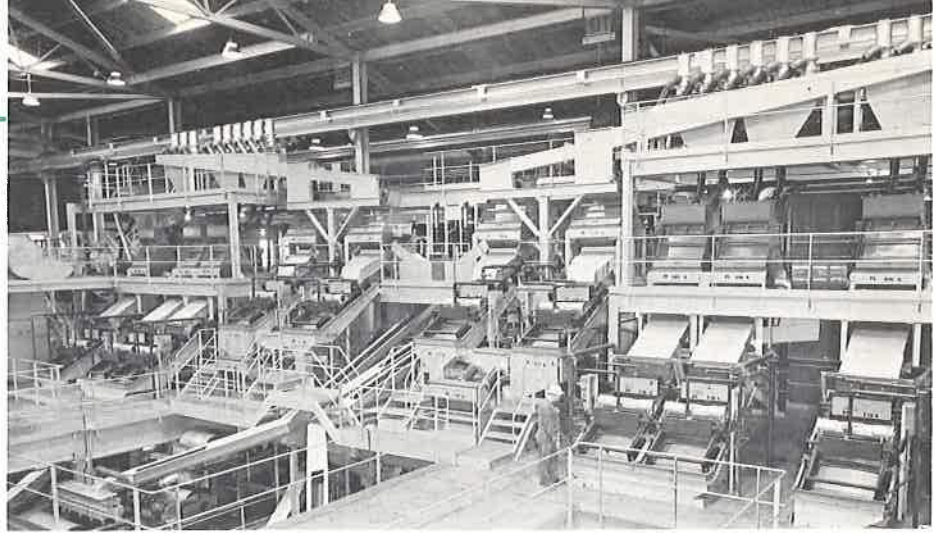
MINERAL CONTROL

Mineral Rights

Ownership of large contiguous blocks of good taconite reserves is essential before any high capacity operation can be implemented. Furthermore, extensive areas of land are required for plants, tailings ponds, etc. There are several basic factors which contribute to the problem of taconite ownership and operations.

One problem arises where single parties hold taconite reserves considerably in excess of those necessary for unitized operations and amortization of capital expenditure.

The second problem lies in the fact that much taconite land is divided into small blocks, which are controlled by various groups or individuals. Consolidation of these blocks is necessary for engineering planning of potential operations. Refusal of one owner to make satisfactory arrangements may make it impossible to develop a large area of taconites.



Oliver's Sherman Concentrator: natural ores need more iron today

The Taconite Tax Law encouraged producers to acquire necessary reserves to justify plant construction. In addition the law enables owners of taconite reserves to hold these reserves indefinitely at nominal cost without developing them. The basic problem is to find a way to encourage development of these reserves without overburdening those companies actually engaged in taconite production.

Another difficult problem arises from the presence of towns, roads, power lines, etc. in much of the area where future developments must be located. It would be time-consuming and costly to acquire the right-of-way and other rights over several square miles so that large-scale blasting and mining operations could be conducted safely and economically. This condition does not exist in Canada or in most other countries where large-scale iron mining development is taking place.

There is presently a statute recognizing the necessity of the power of eminent domain in connection with development of Minnesota taconite resources, declaring the public interests in connection therewith, and granting the power of eminent domain to taconite companies. The power does not apply to the mineral rights themselves so that the individual's mineral rights are adequately protected. This present statute is quite adequate.

The ownership problem is further complicated by the existence of mineral reservations. Much of the land has been conveyed to a third party, reserving the mineral rights with the right to mine and remove the same. The courts have ruled that a tax against a particular tract is not a lien upon the minerals therein; thus the owners of mineral reservations may hold them indefinitely without payment of taxes. Although the surface rights may have changed hands many times, their ownership can be traced; whereas the mineral reservations are not recorded and in many cases it is impossible to locate or identify the owners. These reservations also allow the destruction or use of surface rights with little or no payment. Such reservations constitute a serious impedance to a company contemplating a large taconite operation. Suggested solutions to the problem include a) taxing such reservations so that they may not be held speculatively without payment of taxes; b) protection of the surface owner against attempts to enforce reservations without payment of full compensation for surface damage.

Early acquisition of locations for stripping dumps, tailings basins and other mining and beneficiation facilities is of importance. The use of State lands for these purposes is a consideration. Furthermore, the mining companies must come to reasonable terms before exploration activity can be carried out on State-owned lands. The State should encourage exploration for other minerals, such as copper-nickel occurrences, by adoption of an equitable leasing and optioning policy.

Mineral reservations should be taxed so that they contribute on an equal basis with other types of property toward the cost of government; and so that if the taxes are unpaid, the surface owner could re-acquire the rights. This could be done by an amendment to the statute making future tax assessments against a tract of land effective against the entire interest, both surface and mineral, unless the mineral interest is separately assessed and taxed. Coupled with this should be a provision by which either the mineral owner or the surface owner might have the mineral rights in any tract assessed and taxed separately from the surface by filing petition with the county auditor. There should also be a simple administrative method of assigning a value to the mineral reservations subject to review by the courts.

Surface Compensation

It is quite probable that our courts would hold that a reservation of the

right to destroy the surface without compensation would be contrary to public policy unless exercised within a reasonable period. Most residential and business property in Range communities has been built upon the assumption that the courts would never sustain such reservations. Yet, in the absence of a clear court decision, the reservations have been a serious menace to property values.

The surface owners should be given clear protection against attempts by holder of a mineral reservation to enforce them without payment of full compensation for damages to the surface. A sound approach seems to be a legislative declaration that reservations of the right to use, acquire or destroy the surface without payment of full damages are contrary to public policy, unless exercised within a reasonable time.

"Holding Reserves"

Relative to the present right to control taconite blocks at little or no cost, some action should be taken so that those reserves having value cannot be held indefinitely without obligation. There have been cases in other areas of the world where such privileges have been abused, to the disadvantage of both a nation or state and its mineral industry. The basic problem is to find a practical way to preserve the beneficial features of the tax incentives for taconite production and at the same time to remove gradually the tax limitations protection for those "holding reserves" controlled for future appreciation or speculation. Such "holding reserves" could be defined as those in excess of an initial 50-year life based on rated capacity of an established plant.

A provision should be established under the Taconite Law wherein "holding reserves" of good taconite lands are defined and given the full protection of the current laws for a period of ten years from date of enactment. At the end of this ten-year period the holding tax per acre on established inactive reserves should be escalated at a reasonable rate.

Royalties

Newly arranged royalty agreements, made by mining companies with fee owners of mineral lands, increased the royalty rates to all-time highs in the early 1950's. Again, a monopolistic position and peak demands for ore were the governing factors. Unit payments reached levels of $2.00 to $3.00 per ton. The fee owners, including the State of Minnesota which is one of the largest of this group, also must now tighten their belts, and not seek to drive the ultimate bargain. The right of ownership rests on its temperate use. Some groups are now renegotiating their leases in view of the competitive struggle, and these actions must be accelerated.

Owners of mineral rights should be receptive to renegotiation of leases on iron ore reserves in light of the present-day competitive situations. They, along with mining and transportation companies, labor groups and government, should share in achieving lower costs.

Mineral Rights on Public Lands

Minnesota has an extensive area of relatively unexplored, potential mineral area in the northern part of the State within the areas of State and National forests. Even though these are public lands, very little exploration work is being done by companies, individuals or the State. The U. S. Congress is currently considering legislation that, for all practical purposes, closes to mineral exploration or development large areas within the State designated or to be designated as "wilderness areas". Dedicated conservationists with minds absolutely closed to the principle of multiple-use, or unappreciative of the economic benefit to the State possible through development of its mineral resources, have thrown their vocal support behind this restrictive legislation at the Federal level. The State has not, to our knowledge, taken a public position to proclaim its sovereignty in this domain and to remind the representatives of the people of Minnesota to give utmost consideration to this and the economic factors involved.

Policies should be established which will encourage exploration on public lands. The principle of multiple-use — recreation, forest production, mining — should be adopted for all public lands. The basis upon which exploration and mining can be carried out should be clearly stated and realistically set in order to attract venture capital. The Geological Survey should make maps showing the geology, the royalty and lease terms should be reasonable and economic climate made as favorable as possible. Minnesota should take a strong position in urging that undeveloped areas within its bounds should not be walled off by restrictive National legislation inimical to the economic development of its natural resources in accordance with principles of multiple-use. The State should more effectively and broadly promulgate the idea expressed in the last biennial report of the Department of Conservation: "Conservation is generally defined as 'wise use' of our natural resources. The earlier concept of 'to preserve', and the more popular 'hunting and fishing' approach have been discarded. Today any definition of conservation that does not provide for the present and future use of resources to promote a sustaining economy is unacceptable."

Various mining companies, based in other parts of the U. S. and interested in the development of nickel, copper, limestone and other mineral potentials of Minnesota, have left the State after expenditures of considerable sums of money. Their experience was that the policies of the State and the Federal Government as to leasing of lands was too rigid and time-consuming. Land and mineral rights were too difficult to obtain. As a consequence, we now have a reputation that works against the attraction of venture capital for the development of our mineral resources.

Both the State and Federal Governments should review their policies with regard to the leasing of mineral rights on their lands, for the purpose of attracting mining companies to explore and develop the potentials of nickel, copper and the industrial minerals in Minnesota.

LAND CONTROL

Surface Rights

The development of mineral resources in Minnesota is impeded sometimes by the difficulty in obtaining the necessary surface rights for mining, plant construction, tailings dams and access routes. Numerous owners, often controlling small fractional interests, must be contacted and sale arrangements negotiated at high prices. Existing roads, railroads, power lines and the proximity of communities add to the problem of acquiring mining blocks sufficiently large for economical taconite operations. In this respect we are at a disadvantage to such isolated areas as Quebec-Labrador or Liberia, where such lands are readily available from the government upon acquisition of the mineral leases. Everything possible should be done by the State in order to facilitate such land control problems.

There is presently a statute recognizing the power of eminent domain in connection with the development of Minnesota's taconite resources, declaring the public interests in connection therewith and granting the power of eminent domain to taconite companies. Without this right, a single owner of a small tract located in an essential area could block an entire development. The privilege has not been abused to date, and there would be no occasion for comment were it not for the fact that certain individuals and organizations have attacked the statute from time to time upon their claim that it authorizes the condemnation of property for private purposes. Its repeal would be disastrous.

The statute granting the power of eminent domain to taconite companies should be retained as an absolute necessity for the development of the State's mineral resources and for the public

benefit. Consideration should be given to extension of this power to other types of mineral properties, such as for nickel and copper projects, if the need arises.

Public Lands

Relative to acquisition of State-owned lands located in areas of mineral development, these of course are not subject to the power of eminent domain. It is often difficult for public officials to exercise broad discretionary powers in the disposition of such lands, and delays could prejudice progress. Established statutory procedures outlining the necessary steps would be helpful to all concerned.

Furthermore, there are many political subdivisions along the Mesabi Range, each requiring separate schools and other governmental functions. Area consolidations would improve efficiency and services. Perhaps zoning arrangements, such as practiced by the larger cities to effect needed improvements of benefits to all, could be formed in order to expedite problems of government, land acquisition and the like. All of the towns and communities cannot be saved in any event. This situation is widely recognized, and an intelligent plan of consolidation perhaps will become mandatory.

Statutory procedures should be established whereby mining companies can acquire certain public lands essential or advantageous to the development of mineral projects.

Area consolidation should be effected, and committees established with authority to act regarding matters of land control and acquisition.

EMPLOYMENT

Job Opportunities

It has been stated that Minnesota has the advantage of a skilled labor force trained in iron ore mining and beneficiation. This advantage is not likely to be permanent. The labor force itself may migrate under the inducement of more permanent and stable employment in other states or countries. The know-how built up in the Minnesota industry will be made available throughout the world. The labor force in other countries will become more efficient and well-trained. The resultant rise in productivity, coupled with lower initial wage scales, will have the overall effect of lowering cost per unit output. In the long run, it would seem that Minnesota will lose the advantage of experienced personnel and developed technology.

Total direct employment in the mineral industry of Minnesota averaged over 20,000 persons in 1960, of which 17,000 were connected with the iron ore phases. Many others owed their jobs to mineral production, either directly or indirectly through railroad operations, service industries, stores, etc.

As a case in point, Itasca County has a population of 38,000 people, and approximately 50% of these are dependent directly or indirectly on the mining industry. In December 1961, 1,800 of these 38,000 people in Itasca County were drawing Government assistance. Of this number, approximately 1,500 were men who had formerly worked in the iron mines of the area. The iron mining industry today in Itasca County accounts for approximately half the employment it provided ten years ago.

By contrast, the far eastern end of the Range around Babbitt and Aurora is flourishing. The taconite operations in that area provide year-'round jobs. Come November every year, mine employment across the other portions of the Range drops by half. The 3,000 workers required by the expanding Reserve Mining Company's operations mean the following to that locale and State: 3,360 more households, $17,700,000 more personal income, $8,100,000 more bank deposits, 120 more retail establishments of $10,800,000 annual sales. Each additional one million tons of annual plant capacity constructed will require a capital expenditure of $35 million to $40 million and provide about 350 or more extra permanent year-'round jobs directly connected with mining and beneficiation. If we can achieve our chosen goal of 60 million tons of annual pellet capacity, this means over $2 billion of investment and 20,000 to 25,000 of directly related jobs.

In general, the quality of the work force in Minnesota is excellent. However, there is a considerable change in the character of skills required for the operation of elaborate processing plants compared to the straight mining and treatment of natural ores. Therefore, men must be re-trained. A program is now in effect along the Range country to accomplish this. Another important factor is that of work productivity. Detailed studies have shown that hourly labor costs for Minnesota's iron ore industry increased 120% between 1950 and 1960, whereas labor productivity rose but 25%. This is yet another factor that makes our ores less competitive, and the trend must be reversed. Fringe benefits for the iron ore employees are established on the basis of the steel industry negotiations, and these sometimes impose high and unfair burdens on the iron mining industry, posing critical problems, particularly for the smaller producers.

The State and National Governments should continue and accelerate the program of re-training of personnel, and every effort should be made by industry and labor to increase productivity commensurate with the increased costs and inflationary trends experienced over the past ten years.

TAXATION

Ad Valorem Taxes

Three basic taxes applied to iron ore in the State of Minnesota are: ad valorem tax; occupation tax and royalty tax.

The ad valorem tax is a property tax. The law provides that all property should be taxed on the basis of full and true value. A mill rate set by the local taxing authority is then applied to a statutory percentage of the full and true value to obtain the tax (see examples). The actual assessed full and true value is much less for farming and businesses other than mining. Also, one finds that the statutory ratio for mining is higher than that for other businesses. The overall effect is that the mining company pays a property tax over three times that of other business and over seven times that of farming for the same market value.

The examples assume the same mill

EXAMPLES OF PROPERTY TAX COMPUTATION BASED ON $100,000 MARKET VALUE

	Iron Ore Mining	Manufacturing	Homestead	Farming
Present Worth (Market)	$100,000	$100,000	$100,000	$100,000
Ratio	100%	40%	20%	33⅓%
Full and True	$100,000	$ 40,000	$ 20,000	$ 33,333
Statutory Ratio	50%	40%	25% $ 4,000 40% 16,000	20%
Assessed Value	$ 50,000	$ 16,000	$ 7,400	$ 6,667
Assumed Mill Rate	250	250	250	250
Tax	$ 12,500	$ 4,000	$ 1,850	$ 1,666

rate for mining, business, farming and homesteads. The per capita tax rate is much higher for Iron Range communities. The reason that the expenditures are so high is that the mining companies have been paying the major portion of these taxes. In several instances the mining companies have paid as much as 99.8% of the total taxes. As there have been reductions in mineral valuations, due to depletion and closing down of mining operations, mill rates have been pushed upward to maintain tax revenues.

The taconite law provides for a production tax in lieu of ad valorem and property taxes. This production tax is set at the rate of about 6¢ per ton of concentrates. The same tax basis has been extended to include semi-taconites.

Occupation Taxes

The occupation tax is a tax on the business of mining. This tax is at the rate of 14.25% for natural ores and 12% for taconites, computed on the valuation of the ore mined. Credit against the tax may be obtained for excessive labor costs. The law specifies that the value of the ore at the mine shall be the basis for taxation. Certain statutory deductions, such as mining cost and royalties paid, are allowed in computing the value. Deductions not allowed include:

- Exploration costs not specific to a particular mine
- Research costs
- Federal income taxes
- General administrative expenses if outside State
- Legal and advertising expenses
- Depletion
- Carry-over loss from year to year or mine to mine

Other corporations, including other extractive industries, may deduct all reasonable and necessary business expenses. The 1961 report of the Legislative Commission on the Taxation of Iron Ore has stated that the rate paid by mining companies is more than three times that paid by other industries under the Corporate Income Tax Law.

For the natural ore producers the following additional deductions should be allowed in the computing of State occupation taxes: expenditures for exploration and research on Minnesota's ores; contributions made within the State; interest on monies borrowed for use here.

Royalty Taxes

A royalty is the amount in money or value of property received for permission to mine and remove ore therefrom. The royalty tax is a tax on the royalty, and is at the effective rate of the occupation tax. The tax was originally imposed as a tax on the recipient of the royalty. In practice, it is actually paid by the mining company and hence is an expense item. Royalties are also taxed under the State income tax clause.

Taconite Taxes

The original Taconite Law of 1941 and the Semi-taconite Law passed in 1959 provide special arrangements in view of the complex processing and high capital investments required. A production tax of about 6¢ per ton replaces the ad valorem tax. Currently the occupation tax rate is equivalent to 12%, instead of 14.25% for natural ores, and labor credits generally reduce this to about 3.75% of net income. However, special tax laws relating to railroad operations and local school needs are such as to increase the average tax payments to about 35¢ per ton. In fact, Reserve Mining Company reports that their total tax payments for 1960 were 43¢ per ton of taconite pellets, of which half is for special school district assessments.

Both Erie and Reserve mining companies have realized the need for these special laws and have been generous and forward-looking in paying the necessary school taxes and in providing numerous services to the communities. Somewhat similar procedures are employed at the new taconite-type operations being developed in Canada. It seems that such methods best answer the local problems. Future taconite companies must follow the same course of action, or other sources of revenue must be found.

No change should be made at this time for that section of the Taconite Tax Law imposing a production tax in lieu of other ad valorem taxes, since numerous special ad valorem tax laws have already been enacted to take care of local problems at existing taconite operations. Such problems for new operations cannot be anticipated, but may be met in the future as they arise.

Tax Concessions

In general other states and countries have lower taxes on mining activities than does Minnesota, as shown in the table, "Comparative Taxes", on next page.

Tax laws of competing mineral areas, such as Michigan, Pennsylvania and particularly Canada, also offer incentives for venture capital. Initial tax-free periods, rapid amortization, depletion allowances and deductions for research and exploration expenditures are some of the usual concessions. The policy seems to be one of attracting industry and providing additional jobs in order to create growth and broaden the tax base. In order to hold our share we must match them.

Action has been taken in Washington just recently with respect to the shorter periods for depreciation. It remains to be seen whether this is enough incentive to bring in large amounts of additional capital to the State. If this is not enough, we must continue to press for additional incentives to match those now offered the mining industry by our principal competitor, Canada.

The depletion allowances presently permitted in calculating Federal income taxes should be continued. Further, the Federal Government, receiving as it does one of the larger tax incomes, should permit rapid amortization as an incentive for new plant investments. These national policies are essential in order to stem the flow of heavy outlays of U. S. capital to Canada, which already offers these advantages.

Tax Stability

The Minnesota Legislature has had under consideration for the past year a legislative act and a suggested constitutional amendment designed to provide a long-range tax stabilization policy. The intent may be stated briefly as follows: The combined occupation, royalty and excise taxes imposed upon any person or corporation engaged in the mining of taconite, semi-taconite, reduced or otherwise beneficiated product thereof, shall not be increased so as to exceed the greater of either:

a) The amount which would be payable if such taxes were computed under the laws of January 1, 1961, which apply to the mining of taconite, or
b) The amount which would be payable, with respect to such mining, if such person or corporation were taxed under the State income tax applicable to manufacturing corporations transacting business within the State.

In other words, this act or amendment would provide a method of raising the taxes in the event that future levies on taconite production should become less under the Taconite Law than under the corporate tax system. In addition, a second part of the act included a restriction that within an eight-year period at least $250 million of additional capital investment (including the $120 million being spent for Reserve Mining Company expansion) must have been made in the State of Minnesota before the act would become effective.

The ultimate net effect of such a course probably would be to place the taconite mining industry, with its elaborate processing plants, on a corporate income tax basis, the same as now obtains for other businesses in the State and for other phases of our mineral industry. It must be remembered that the iron ore industry was placed in a discriminatory position by the passage of the Occupa-

COMPARATIVE TAXES OF IRON ORE-PRODUCING AREAS

	FEDERAL	STATE OR PROVINCE	LOCAL
MINNESOTA	30% of first $25,000; 52% over $25,000. State and other taxes deductible from income. Depletion Allowance: 50% of net, 15% of gross.	Natural ores: 14.25% occupation and 14.25% royalty tax. Taconites: 12% occupation and 12% royalty tax. Labor credit allowed at fixed % of total labor cost above base.	Natural ores: Property tax on unmined ore 50% full and true value times mill rate (up to 700 mills). Taconites: 1) less than 1000 ton production at $1 per acre; 2) over 1000 tons per year/acre at about 6¢ per ton.
MICHIGAN		Corporate tax of 1¢ per ton of iron ore produced.	All property assessed at true cash value. No special tax on iron ore.
WISCONSIN		Graduated corporate tax: 2% first $1,000, ending with 7% over $7,000.	No special tax on iron ore. Property taxed at full value. An in lieu production tax of 2% of the value for ore requiring fine grinding.
PENNSYLVANIA		Corporate income tax of 6%.	Ad valorem tax at same rate as personal property.
WYOMING		No income tax. Gross product is taxed in lieu of land taxation. 1961 tax less than 12¢ a ton.	No income tax. Gross product is taxed in lieu of land taxation.
CANADA	18% of first $35,000; 47% over $35,000. Plus 3% for Old Age Security. First 3 years income not taxable. Depletion allowance: 33⅓% of net. (25% for non-operator.) Depreciation: 30% declining balance for mine buildings, machinery and equipment. Exploration, drilling and development expenses are deductible.	**Quebec:** Tax rate 4% to 7%. **Ontario:** $10,000 to $1 million, 6%; $1 million to $5 million, 11%; over $5 million, 12%. **Labrador:** Tax rate 5% of net profit.	**Quebec:** No ad valorem tax on minerals. Annual rental tax of 10¢ per acre on unpatented concessions. **Ontario:** Ad valorem tax and special mine tax of 10¢ per acre. **Labrador:** Rent for lease at 10¢ per acre per year. Provincial taxes deductible from F.I.T. up to 9-10%.

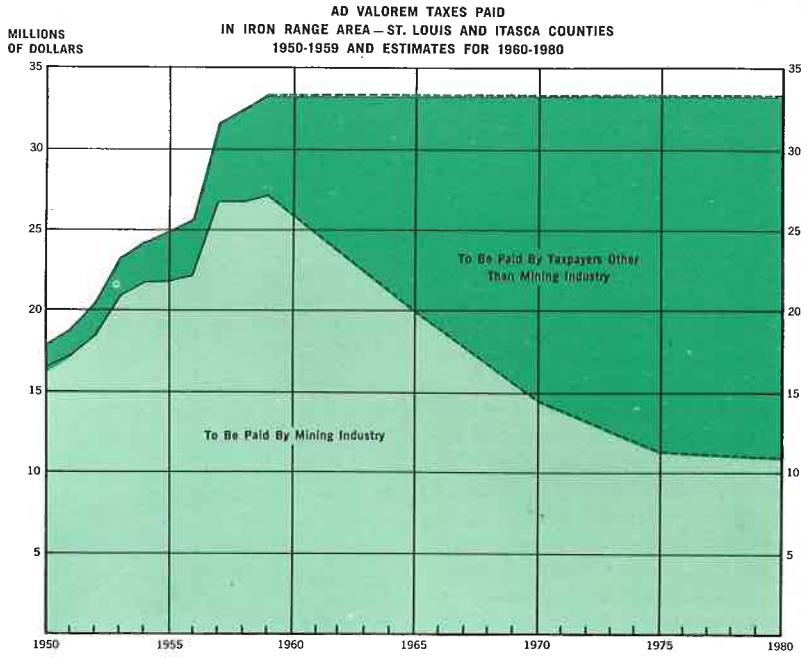
tion Tax Law under the 1922 Constitutional Amendment and the new proposed taconite amendment is simply rectifying, by the same route of a constitutional amendment, the special arrangements made in 1922.

The State should assure the taconite industry long-term stabilized tax treatment. The preferred course is through the so-called "Taconite Amendment", waiving the requirement relating to a minimum expenditure of $250 million within eight years, so as not to discourage plant investments by small companies. Second choice, considering the urgency, would be immediate passage of a legislative act, to be followed later by an amendment.

Property Taxes

The Range communities have continued a high level of spending, even in the face of decreasing ore reserves and shipments. Mill rates are sky rocketing, throwing a particularly heavy burden on the natural ore properties. Companies considering the construction of taconite plants on the Mesabi in the area west of Virginia fear that the heavy tax loads will be shifted to their pellet production.

Real efforts should be continued toward the equalization of property valuations now underway in iron mining communities. Costs should be cut and ad valorem property taxes adjusted to a reasonable basis. Special State aids to temporarily maintain essential services may have to be considered for some communities which a) have lost mineral values to a serious extent; b) have cut services and costs to a reasonable minimum; and c) have non-mineral properties paying taxes at high rates.



This chart shows the rapid rise between 1950 and 1959 of the burden of ad valorem taxes on the iron mining industry, and the increasing burden that will have to be borne by other taxpayers during the next 20 years if present levels of expenditures are maintained in the face of declining valuations.

RESEARCH

Beneficiation

Technologically, magnetic taconites are a going business today. But the final product, containing 8%-9% silica, is rather poor in grade by comparison with competitive materials.

The pellets must be improved to 6% silica, and this requires additional treatment processes. The utilization of non-magnetic taconites and semi-taconites hinges upon a break-through in one of the several possible methods now under consideration. The scope of this problem is large and applies to more than half of the taconite reserves on the Ranges. The solution vitally affects many Range communities, thousands of Range people, their industry and well-being. It is certainly one of the more important problems facing the State and the industry today.

An expanded research program by industry, the University and Government is vital. Engineering and economic studies, now being conducted, should be pursued. In connection with research support, it is important to note that under the new subsidy program of the Canadian government, Canadian affiliates of United States Companies – as well as wholly-owned Canadian firms – are eligible for industrial research grants amounting essentially to 50% of research costs. Taking into account the fact that these research costs are already partly deductible for Canadian corporate income tax purposes, the net effect will be a cost to the investor in Canadian iron ore industry of but 25¢ for each dollar expended.

Tax income to local and State governments has averaged $51,570,000 per year during the 1956-60 period, from about 53 million tons of average annual production. In addition, the State received an average annual royalty of $3,860,000 from its iron ore holdings. Monies invested in the Geological Survey and the Mines Experiment Station represent considerably less than 1% of that tax and royalty income, or about ¾¢ per ton of ore shipments. It would seem that 2¢ to 3¢ per ton of production, equivalent to $1 million annually, is a realistic amount for essential research to perpetuate the industry. In the chemical and electronic industries it is typical to allocate 5% of income for research.

The State should greatly expand its research efforts in the mineral industry, particularly in the development of new methods of concentrating and agglomerating the semi-taconites and the taconites. The Legislature has been forward-looking during the past 50 years in supporting the Mines Experiment Station. But we are now in a period of crisis, and the effort must be doubled or tripled.

Direct Reduction

Relative to the future of direct reduction plants in Minnesota, it is generally true that economics favor the location of iron and steel-making plants, using Minnesota ores or pellets, in the lower lake region rather than in this area. Millions of dollars have been expended by the steel companies, and others, to study the potential of direct reduction methods. They showed such processes are generally economic and competitive only under special situations where coking coals are lacking and demands are inadequate for efficient blast furnace operations.

As to current markets for D-R products, there is insufficient demand for pig iron and steel in the Minnesota-Dakotas-Montana region to keep the three blast furnaces and the associated steel plant near Duluth operating anywhere near full capacity. Our State is not an attractive location for large D-R plants. There is, looking to the future, perhaps a limited market for the product of one or two relatively small plants. It must be remembered that D-R materials from Minnesota or elsewhere would have to

be accepted as substitutes for charge components now being used in the iron and steel industry. Furthermore, the desirability of D-R iron as a charge component for present-day iron and steel practice is yet to be proven. The direct reduction programs that have been publicly discussed apparently are planned for plants of small or medium capacity and could, if feasible, supply employment to but relatively few people. However, there are substantial reserves of ores that cannot be treated by conventional means. So market studies and economic appraisals should proceed as a phase in the overall research program.

These studies should use the previous data developed by Battelle Memorial Institute for Northern Natural Gas Co. and the iron ore companies, as well as pilot plant results from the Krupp-Renn Strategic Udy, R-N and other processes.

Market studies and economic appraisals of the more promising methods of direct reduction should be made by independent engineering firms of outstanding reputation, and no commercial facility should be constructed with public funds unless economic feasibility is proven. Research should proceed on the problem of reserves and mineralogical characteristics of those stockpiles and readily accessible materials that are best adapted to direct-reduction processes. However, in no case should these efforts be at the expense of essential progress in the more important areas of the semi-taconites and the non-magnetic taconites.

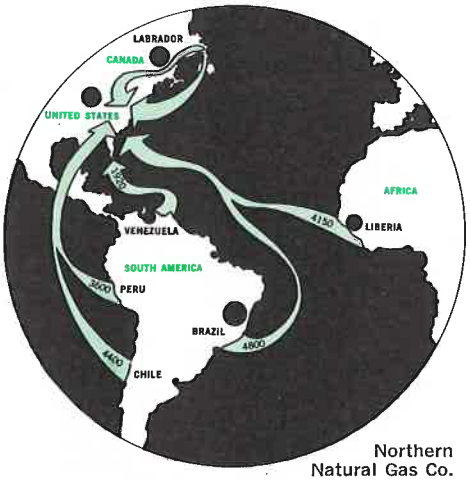
TRANSPORTATION

Competitive Costs

Transportation cost makes up approximately one-half of the price of iron ore delivered from the Mesabi to Pittsburgh. The Lake Superior region has only one economic shipping route: rail-lake-rail. The rail transportation costs from the Lake Superior District to points of consumption generally put the area at a competitive disadvantage. The rate from Baltimore to Pittsburgh is 11.6 mills per ton-mile as compared to 21.3 mills from lower lake ports to Pittsburgh. The differential is even less favorable for upper lake haulage. On the other hand, a very favorable rate of 8.8 mills per ton-mile exists from upper New York State and various points in Canada to Pittsburgh. Application of this same rate to the two rail portions of the Mesabi to Pittsburgh shipment would give a reduction of nearly $2 per ton on the delivered cost.

Privately owned railroads are already playing an important part in the competitive picture in Venezuela, Liberia and Canada, just as they are at Reserve and Erie. These modern, efficient railroads require heavy capital expenditure, but make for ultimate ton-mile costs at a fraction of U. S. commercial rates. It is in the best interests of the Nation, as well as the railroads and iron ore industry, to work together in an effort to reduce iron ore transportation costs.

The most significant factor in the transportation of foreign ores is very cheap ocean transportation. Large ocean-going ships have a greater carrying capacity coupled with low wage rates, which make for cheaper shipping, loading and handling costs. In addition, the opening of the St. Lawrence Seaway permits carriers of imported ores to penetrate deeper into the heart of the steel-producing region.



Northern Natural Gas Co.

DISTRIBUTION OF IRON ORE RESERVES

Known world reserves of iron ore have increased tremendously in the last 15 years. This map shows the principal producing areas that are replacing Minnesota's tonnage of the U. S. blast furnace requirements. The size of the dots indicates the relative size of the reserves. Distances are in nautical miles.

In summary, Minnesota must compete against low-cost ocean transportation while faced with higher relative rail and lake rates than our competitors.

Railroads

Until 1955 the Lake Superior ores had a big advantage over foreign ores from a transportation standpoint in serving the Chicago and Pittsburgh furnaces. This is no longer true because of the advent of the St. Lawrence Seaway and low railroad rates effective from the east coast.

The combination of upper and lower lake railroad freights plus lake charges represent one of the major cost factors for Minnesota ores — some $6.70 per ton. Whereas competitive ores move from the east coast, New York State and Canada to Pittsburgh at rail rates of about 1¢ per ton-mile, rail rates for Mesabi ores to Duluth and from lower lake ports to Pittsburgh are from 1.5¢ to 3¢ per ton-mile.

Four different railroads move ore from Minnesota mines to docks. As tonnages fall off, the unit cost of these carriers will increase, and there is a very real possibility that rates must again be raised. It would seem that consolidation of railroads, with elimination of some of the ports and modernization of others, is a necessity in order to keep costs in check.

The State and Federal Governments, together with the Range communities, should give sympathetic hearing to the consolidation of Range railroad operations and docking facilities.

Lake Rates

Our lake rates of $2 per ton are high in relation to comparable costs for other ores, because the United States requires the use of domestic vessels between U. S. lake ports during times of peace. Reliable reports are that foreign vessels can be chartered for similar services at about $1.30 per ton, a saving of 70¢ per ton.

Foreign ores, moving in fast modern vessels of 50,000- to 75,000-ton size with very cheap labor costs, realize rates as low as $2.60 from Liberia, $3.25 from Peru and $3.75 from Brazil. These boats operate on a year-around schedule. By comparison, our lake vessels of 25,000-ton maximum capacity can be used but seven to eight months per year. An additional factor jeopardizing our competitive position is that Canada will now subsidize 40% of the cost of their new lake ore carriers, about $3 million per vessel.

Port Cartier in Quebec and Stockholm in Sweden employ ingenious methods of "bubbling" air to keep their harbors open in winter. Increased efficiency in the use of dock and vessel facilities, coupled with the savings realized from carrying smaller stockpile inventories at the furnaces, should permit lower shipping rates.

State officials should urge the Federal Government to establish a subsidy to domestic lake carriers, representing the difference between their costs and those of foreign vessels plying from Canadian and foreign ports to U.S. lower lake ports.

The State and Federal Government, together with the shipping companies, should study the possibility of keeping the lakes and channels open for a longer shipping season.

Integrated Trains

Consultant engineers have studied the possibility of using "integrated trains" for moving coal and iron ores directly from mine to blast furnaces. They claim that rates as low as three to five mills per ton-mile can be realized, thereby replacing the present railroad-lake-railroad-stockpile method of handling. These so-called "integrated trains" feature special cars in a long train, highballing directly from source to consumer.

The railroad companies, the mining

industry and the State should study the potential of "integrated trains", with year-'round movement of pellets and ores directly from mine to furnace.

WATER SUPPLY

Rights

There appears to be an adequate water supply along the mining ranges to meet the needs of taconite development without prejudicing recreational or scenic aspects. Permits for the appropriation of water are granted by the Division of Waters for industrial, commercial and mining use for unlimited periods of time. These are subject to revocation only for violation of permit provisions after due notice and opportunity for a public hearing. Under permit, surface water may be appropriated and impounded subject to the acquisition of necessary legal rights from riparian owners. Spring and freshet water may be appropriated from lakes and streams and impounded by industries on their own land.

Permits issued for the appropriation of water for mining purposes contain a provision that the applicant must comply with the rules and regulations of the Water Pollution Control Commission. Since the advent of closed-circuit basins for disposal of plant rejects, the Commission – with excellent co-operation from mining companies – has reduced complaints of this kind almost to zero.

Two taconite operations obtain water for industrial use from Lake Superior: Reserve Mining Company for its ore beneficiation plant at Silver Bay and Erie Mining Company for its power plant at Taconite Harbor. Both of these water appropriations are under permit, and practically all of the water used is returned to the lake. In the case of the operation of the beneficiation plant, the water returned to the lake carries tailings from the concentrating process. This latter permit was granted after many public hearings before the Commissioner of Conservation and the Minnesota Water Pollution Control Commission.

No difficulties have arisen so far relative to water rights and supply, nor have any permits to mining companies been revoked. Lack of problems in this area is attributed to the excellent co-operative relations among the companies, the Water Pollution Control Commission and the Division of Waters. Looking to the future and the increasing demand as new taconite plants are being planned, it is likely that complexities could delay action on permits. With this possibility in mind, the Legislature might establish statutory procedures expediting the granting of such permits.

IRON LANGUAGE

beneficiation. Any process of treating low grade iron ore material, beyond simple crushing and screening, to remove impurities or moisture from the crude material, thereby increasing the iron content of the product.

concentrate. The product of any method or process of ore beneficiation.

direct reduction (D-R). A method, other than the blast furnace, that converts iron ore partly or completely into metallic iron.

direct shipping ore. Ore that can be used without beneficiation.

gross ton. 2,240 pounds. Adopted from Great Britain's **long ton**, along with our other units of weights and measures. Iron ore is bought and sold by the gross ton. Common carriers base their freight charges on the number of gross tons shipped.

iron ore material (low grade iron ore). Iron-bearing material having low iron content and a high content of silica, alumina or moisture, or a combination of all three.

magnetite. Magnetic iron ore. Chemically it contains three parts iron to four parts oxygen.

merchantable iron ore. Marketable; acceptable for use in making steel. This term includes direct shipping ore and concentrate.

natural ores. Ores derived from altered iron formation that include direct shipping ores, concentrates from wash and gravity separation plants and other ores not produced by either the semi-taconite or taconite processes.

pelletizing. A process involving the forming of very fine ore particles into balls or pellets having about 10% of moisture, and the firing of the pellets at a temperature below that of actual melting, to harden them so that they will stand handling without excessive breakage.

semi-taconite. Altered taconite which has been partially leached and oxidized, and in which the iron-bearing particles of merchantable grade are smaller than 20 mesh, and which cannot be made merchantable by conventional methods of beneficiation. Sometimes referred to as soft taconite.

silica. Silicon dioxide; sand, quartz, flint.

taconite. Iron-bearing rock, known as chert, very dense and hard, containing 25 to 35% iron as oxides, silicates and carbonates. Taconite generally refers to the Mesabi iron formation from which the enriched ore bodies of the Range were derived.

The Legislature should establish procedures to simplify and expedite the granting of water permits; perhaps setting a time limit within which permits should be either granted or denied.

FUELS

Power Availability

Most foreign countries where iron ore development is now taking place have cheap sources of power. As an example, the Hamilton River will provide a source of low cost hydro-electric power for the Carol Lake project in Canada. The cost in this case will be about four mills per KWH as compared to six or eight mills for Minnesota taconite operations. This cost differential is an important factor since about 85 KWH are required for each ton of pellets.

Apart from peat, which is very low in calorific content and hence non-competitive, Minnesota has no fuel resources. However, availability of natural gas, oil, coal and lignites at a low cost are extremely important from an industrial standpoint. A sizeable oil refinery business is developing in the State, and natural gas is becoming available in most parts. Cheap fuel is essential to a growing mineral industry, being used in glass factories (sand), light weight aggregate plants (expanded shale), taconite processing and direct reduction iron plants.

One of the large potential uses of lignite or natural gas is for the magnetic roasting of semi-taconites and non-magnetic taconites and for the production of a pre-reduced pellet. Approximately ¼ to ⅓ of a ton of lignite would be required to meet the heat requirements for each ton of pellets produced from non-magnetic taconites. Research efforts by the U. S. Bureau of Mines Research Center in Minneapolis and by the Universities of Minnesota and North Dakota are developing methods of utilizing lignite and natural gas for these metallurgical processes. Some of this work is being sponsored by the Great Northern Railroad. The iron mining companies are experimenting with coal and oil in their pilot plant tests of the magnetic roasting process.

Northern Minnesota is in real need of a supply of cheap fuel. The possibility of attaining this is linked with the development of a large sustained demand; and hence inter-related with the expansion of the taconite industry.

Natural gas service cannot be extended to the communities of the Iron Ranges until a large industrial load has been developed. Likewise, lignite is not available for less than $5.50 per ton placed on the Mesabi Range until there are

major demands from established taconite plants. Since the creation of these new plants will depend to a large extent upon the development of new processes utilizing and converting low-grade non-magnetic ores, it follows that a strengthened program of research is required.

Research on the utilization of lignite and natural gas for magnetic roasting of ores and the pre-reducing of pellets should be expanded. It is suggested that the several interested agencies in Minnesota co-operate with equivalent agencies in North Dakota for the economic betterment of both States. In addition, the State Geological Survey should work with the suppliers of natural gas in the study of underground sites for surge storage in order to provide uninterrupted service of that fuel throughout the year.

OTHER MINERAL DEPOSITS

(See map inside back cover)

Industrial Minerals

A sound policy concerning the exploration, development and production of the State's non-metallic and other minerals must be implemented.

Building Stone. Minnesota probably has more excellent and beautiful varieties of granite than any of the states. As is true in many fields, modern requirements have tended to concentrate the business in a few large companies. Expensive plants capable of producing a large variety of forms and stone of varied appearance and a large sales force are necessary to make an operation profitable. It is fortunate that Minnesota's largest operators are energetic, modern in outlook, and able to maintain a market in spite of severe competition even from abroad.

Dolomite from Mankato and Winona has commanded a market in moderate amounts and probably will continue to do so for a long time. The best help to the dimension stone industry will be an intensive advertising of the many beautiful stones produced in Minnesota.

Limestone for Cement. Most Minnesota carbonate rocks are too high in magnesium for the manufacture of Portland Cement, but the Prosser member of the Galena limestone in southeastern Minnesota is suitable. The Universal-Atlas Company announced plans to build a plant southeast of Rochester, but increase of capacity by plants in Iowa has satisfied the immediate demand with a margin of excess capacity at the moment. A plant should eventually be built in Minnesota and would be a welcome addition to the State's industry. Other cement companies have indicated an interest in Minnesota, thus stimulating study of the problem.

Silica. Minnesota has an abundance of relatively pure sandstone, which is easily quarried and disintegrated to furnish silica for glass and other uses. The recent construction of two glass plants south of the Twin Cities is a welcome utilization of this resource, and production should increase as the area continues to grow.

Clay and Shale. Clay products have been manufactured in the State for many years. Only a few operations are in existence due to the lack of known desirable clays. The great need at the moment is for a detailed, modern investigation of the clay and shale deposits in order to locate deposits suitable for various purposes. A sewer tile plant at Red Wing, for example, is threatened with the exhaustion of suitable clay within a reasonable period. Much of the clay and shale in Minnesota deposits is too high in lime for most uses. Thus, it is essential that suitable clay deposits be located, amounts estimated, analyzed and tested so that potential users can be encouraged to develop the deposits.

Certainly, with the growth in population, the demand will increase for bricks, drain tile, sewer tile, light-weight aggregate and many other products. An aggressive campaign to develop this resource is needed.

Marl. Fresh water marl is abundant in many of Minnesota's bogs and lakes. It consists of calcium carbonate, water and variable amounts of clay, silt and sand. Many uses have been suggested, but at present its only use is in liming acid soils. For this purpose it suffers some by competition with crushed limestone and dolomite because of its high content of water, which is not easily eliminated. Investigations have been carried on to determine the feasibility of using marl for the manufacture of Portland Cement, but thus far a lack of a large enough tonnage within a limited area seems to have discouraged development.

Other Possibilities. Minnesota has rather limited industrial minerals as compared with some states, but not all possibilities have been exhausted. The granites and associated rocks of northern Minnesota are known to have many pegmatitic masses. These are similar to granite in composition, but very coarse grained feldspar and mica are common constituents. It is possible that intensive mapping and investigation of these deposits might find some of commercial interest. There are also other minerals which may occur in these pegmatites.

Many concentrations of the mineral ilmenite, an iron-titanium oxide, exist in the high gabbro mass of northeastern Minnesota. The ilmenite occurs with magnetite, and the term titaniferous magnetite is used to refer to the assemblage. Titanium is a useful metal but there are many problems involved in producing high-grade titanium metal. There are large deposits of titanium-bearing ores better situated than those in Minnesota, so no development in the near future seems in prospect; but there is always hope that new technological developments will create a demand.

Investigations Needed

It is proposed that the known deposits of these types be investigated in detail. The occurrences should be mapped and the quality, quantity and utilization of materials must be studied chemically, physically and mineralogically. Greater publicity, on a nation-wide basis, must be given to these resources, so interested companies can be attracted to Minnesota.

Occurrences of copper-nickel sulfides in the Duluth Gabbro have been explored by private and governmental agencies. Since their discovery there has been very little published on the origin, manner of occurrence, and regional geologic aspects of the occurrence. A geologic study of the Duluth Gabbro with particular emphasis on the copper-nickel deposits would serve to re-awaken interest in these potentially important mineral resources. Minnesota has little high-grade manganese ore, but it has a great tonnage of various types of low-grade materials, as well as manganiferous iron ores. A process has been developed for extracting manganese from low-grade manganiferous ore. A plant was built in Minnesota and operated for a period of time, but it was closed as a result of competition from foreign sources of raw material.

An aggressive program of geological and processing investigations should be pursued on our non-metallic, copper, nickel and manganese mineral potential, with broad publicity of the availabilities of these materials so as to encourage investments. Toward this end, the Minnesota Geological Survey and the Mines Experiment Station must be given greater support funds. The excellent work of the U. S. Bureau of Mines should also be extended.

PEAT

Its Future

About one-tenth of the land area of Minnesota consists of peat bogs. Lying mostly in the northern counties, they are estimated to contain some five billion tons (dry basis) of peat, which is about half the national supply. It should be noted that while general knowledge of location and extent of reserves is known, specific information of commercial-grade

peats, especially the sphagnum moss types, is limited because of inadequate surveys, and there is thus not sufficient data to benefit prospective developers.

Current U. S. consumption of peat is about 1 million tons a year. Most of this material is used in soil conditioning and specialty horticultural applications, and the market has been growing rapidly – increasing ten-fold since 1940 and currently doubling every five years. The type of peat in greatest demand is sphagnum moss peat, of which so few commercially economic deposits have been found in this country that about 50% of total U. S. peat consumption consists of imported moss. A few economic deposits of sphagnum peat moss have been found in Minnesota. These are being operated by two or three sizeable producers and by about a dozen small producers. In the national picture, Minnesota peat production is still quite small.

Use of peat for fuel does not offer much promise because of the large reserves of lignite, coal and petroleum in this country which would always be competitive. Use of peat for chemicals, while probably not immediate, may be a possibility in the future provided research continues in this field.

The U. S. Bureau of Mines which issues annual reports on peat production defines peat as unconsolidated vegetable matter related to coal and lignite, i.e. fossil fuels. The U. S. Department of Agriculture defines peat in the sense that it serves as a growth medium for plants or has major use in agriculture and thus is a soil of vegetable origin developed under bog conditions containing at least 30% by weight (oven dry) organic matter.

Current research activity is directed towards the location, via field surveys, of commercial-quality peat (principally sphagnum moss types), mapping and "proximate" chemical analysis to assay chemical utilization potential. University of Minnesota (Duluth) researchers in soil science and in chemistry are involved, the Iron Range Resources and Rehabilitation is providing field survey personnel and financial support.

Sphagnum peat moss from Minnesota is competitive with that from any other source, domestic or foreign. The problem is not one of production, except for "quality" control or marketing, but rather of finding economic deposits. To this end, the systematic bog-sampling program currently being conducted by the Iron Range Resources and Rehabilitation Commission should be expanded with technical direction from University researchers. After the survey, maps should be prepared showing the location, areal extent and thickness of these peat deposits. Commercial development of suitable bogs should be encouraged.

The great bulk of Minnesota peats, probably more than 95%, are types other than sphagnum. Most soil scientists feel that these peats (reed-sedge and others) have outstanding value for horticultural and agricultural applications. Research should be conducted into new uses for these peats, such as in the production of organic-based fertilizers, soil conditioners, animal bedding, horticultural applications (lawn, garden, nursery and greenhouse) and others. Successful production hinges in part on improved mining and recovery techniques. Marketing of these peats would be dependent on an advertising program to educate the public on the merits of reed-sedge peats. That this is feasible is demonstrated by the successful marketing of peats from Michigan (nearly all reed-sedge) in the Northeast and Middle Atlantic states, where they are now well known to the consuming public and enjoy a good share of the market.

From the long-range point of view, chemical utilization is a potential which is always present, and which eventually must be realized. Such realization can only come as the result of a sustained program of research. This would consist of fundamental chemical and soils research on the classification and analysis of peats; isolation of the various constituents of peat; determination of the chemical structures of these constituents; chemical transformation of these constituents to new and possibly useful substances.

The research programs currently underway on the horticultural and chemical uses of peat, and sponsored by the Iron Range Resources and Rehabilitation Commission should be continued on a long-term basis.

GOVERNMENTAL POLICY

National

The mineral policy of any state, and the actions of its mining communities, are to a large extent dependent on the mineral policy of the Federal Government. The stated objective of the U. S. as now being followed was set forth by the President's Material Policy Commission in 1952: "The national materials policy should be to insure an adequate and dependable flow of materials at the lowest cost consistent with national security and with the welfare of friendly nations". Some authorities object to such a course. With mineral requirements constantly increasing, the adverse trend in production has caused a serious decline in the Nation's ability to supply its own strategic material needs. In 1960, domestic iron ore production failed to meet demands by 18%. A Bureau of Mines projection indicates that by 1975 the deficit may be 40%.

Deterioration of the Nation's security in strategic metals has been accompanied by declining prestige of the United States in the mineral world and Communist gains in mineral strength. Whereas self sufficiency is a cardinal principle of Soviet policy, ours is based on the principle of free trade and least cost. Considering national security, however, it would seem that our steel industry and the Federal Government should not rely on more than 40% of our iron ore requirements coming from foreign sources.

Local

The conclusion to be drawn from this background is that the State of Minnesota and its mining communities cannot count on the establishment of Federal stockpiling or tariff protection to help rebuild their iron ore industry. It must be done by meeting competitive costs and quality on every front. Toward that end the responsibility of the Federal Government is to hold wages in line with productivity, to provide offsetting tax advantages to those offered by Canada, and to encourage investment by the iron and steel industry in taconite processing in the United States. In like measure the State and its citizens must increase work productivity, alter public attitude toward the mining industry and realign the tax base. It is abundantly clear that some of the local governments and the approximately 40 school districts on the Ranges must be consolidated for efficiency and economy. The State should provide the leadership necessary to effect this.

A thorough study should be made by a competent professional group of the consolidation of local governments and their school districts, with the ultimate aim of providing better and more efficient services and education at lower costs. The Municipal Reference Bureau of the University of Minnesota should co-operate with the various departments of the State Government toward that end.

THE PUBLIC INTEREST

Educational Programs

The importance of public interest in the development of Minnesota's mineral resources is apparent from the simple fact that a political solution is necessary to obtain further large-scale taconite investments. The attitude of the public determines in a large degree what law or laws will be passed. The problem of preparing recommendations is simple in comparison to translating them into law. This is especially true as it affects the Minnesota iron mining industry with its

long history of prejudice, hates and conflict.

The essential difficulty is the existence in Minnesota, and especially on the Iron Ranges, of a deep-set and widespread cultural lag in the thinking of many of the people, bound by strong emotional feelings. Specifically, the thinking of a large part of the population is based upon an image of the industry as it existed 20 years or more ago. While many realize that conditions have changed, there is a natural reluctance to accept an economic status for the area that is vastly inferior to the preferred image. Part of this is understandable in view of the kaleidoscopic changes that have taken place in just the last decade, many of which involve technological changes well beyond the understanding of the average citizen.

The image of the iron ore industry that generally exists is one of absentee ownership, with all financial controls in the East. It is regarded as grasping and indifferent to the welfare of the people in the area. The image of hard-working managers, engineers and scientists spending large sums of money trying to create or save jobs through research, or of a Minnesota iron ore industry trying desperately to compete in a world market — this image of a constructive and progressive industry is not at all common.

Special efforts must be made to overcome these traditional attitudes. Nothing will come of the recommendations of the Council or similar recommendations by other groups unless a concerted and well co-ordinated program is undertaken to influence and change public opinion. When there is no understanding of the economic situation, there is little hope for intelligent reform. Therefore, a public education program is imperative. It is preferable that this program be neither sponsored nor financed by the industry, because past experience has proven that the information immediately becomes suspect.

Somewhat similar programs of public information are sponsored by the University in the fields of agriculture and public health. It is hoped that funds to support this effort could be obtained from a foundation.

A program of public education concerning the iron ore industry of Minnesota and its problems in the sphere of world competition should be established under the aegis of the University of Minnesota, with the support of its president. An informed citizenry is just as important as the development of new processes that can and will be used by our principal competitors. The presentations should be factual and free of industrial or political connotations.

DIRECTORY OF MINERAL AGENCIES

The following is a brief description of agencies which have functions bearing directly on the development of the mineral industries. Only those functions specific to mineral development are included.

STATE

Department of Conservation. *The Division of Lands and Minerals* acts as agent for the public schools, the University and other educational and State institutions in selling or leasing State-owned lands and minerals; acts as agent for counties and local taxing districts in exploiting and leasing iron ore and other minerals located in tax-forfeited lands; conducts research on low-grade minerals; and promotes the exploration and development of minerals in areas where iron ore and other minerals are not known to exist.

The Division of Waters is concerned with the administration of State laws applying to all public waters.

IRR&R. The Iron Range Resources and Rehabilitation Commission is supported by funds derived from the iron ore occupation tax. The Commissioner thereof is appointed by the Governor and is authorized to use said funds in developing the remaining natural resources of any county in need as a result of removal of its natural resources; and in the vocational training and rehabilitation of its residents.

Department of Taxation. *The Mining Division,* using information furnished by the mining companies and the Ore Estimate Division, works out detailed valuations and tax determinations as authorized under the existing laws.

UNIVERSITY OF MINNESOTA

The Mines Experiment Station, operated as a Division of the School of Mines and Metallurgy, was established in the fall of 1911 for the purpose of promoting the development of the mineral resources of the State. The activities of the station are confined largely to mining and metallurgical investigations. The station also reports on those properties for which a petition has been filed requesting classification under the laws as low-grade iron ore.

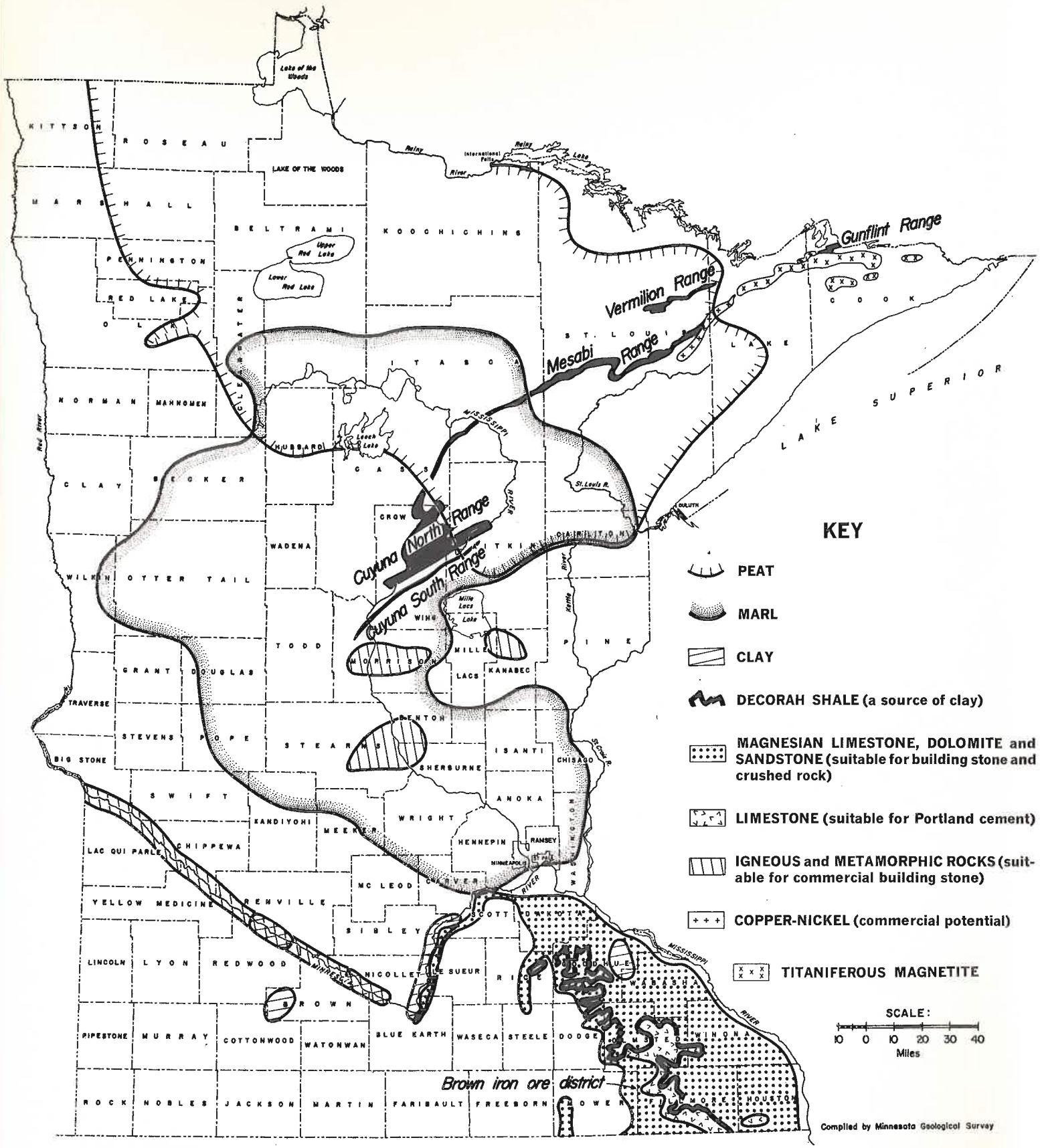
Ore Estimate Division. Under a 1909 agreement made by the Tax Commission and the Board of Regents of the University of Minnesota, this Division of the School has the responsibility for making estimates of reserve tonnages and grade.

The Minnesota Geological Survey is a part of the University of Minnesota. The Survey works closely with the Mines Experiment Station and the University of Minnesota Geology Department. Its functions are to make fundamental geologic studies and intensive resource investigations in the State.

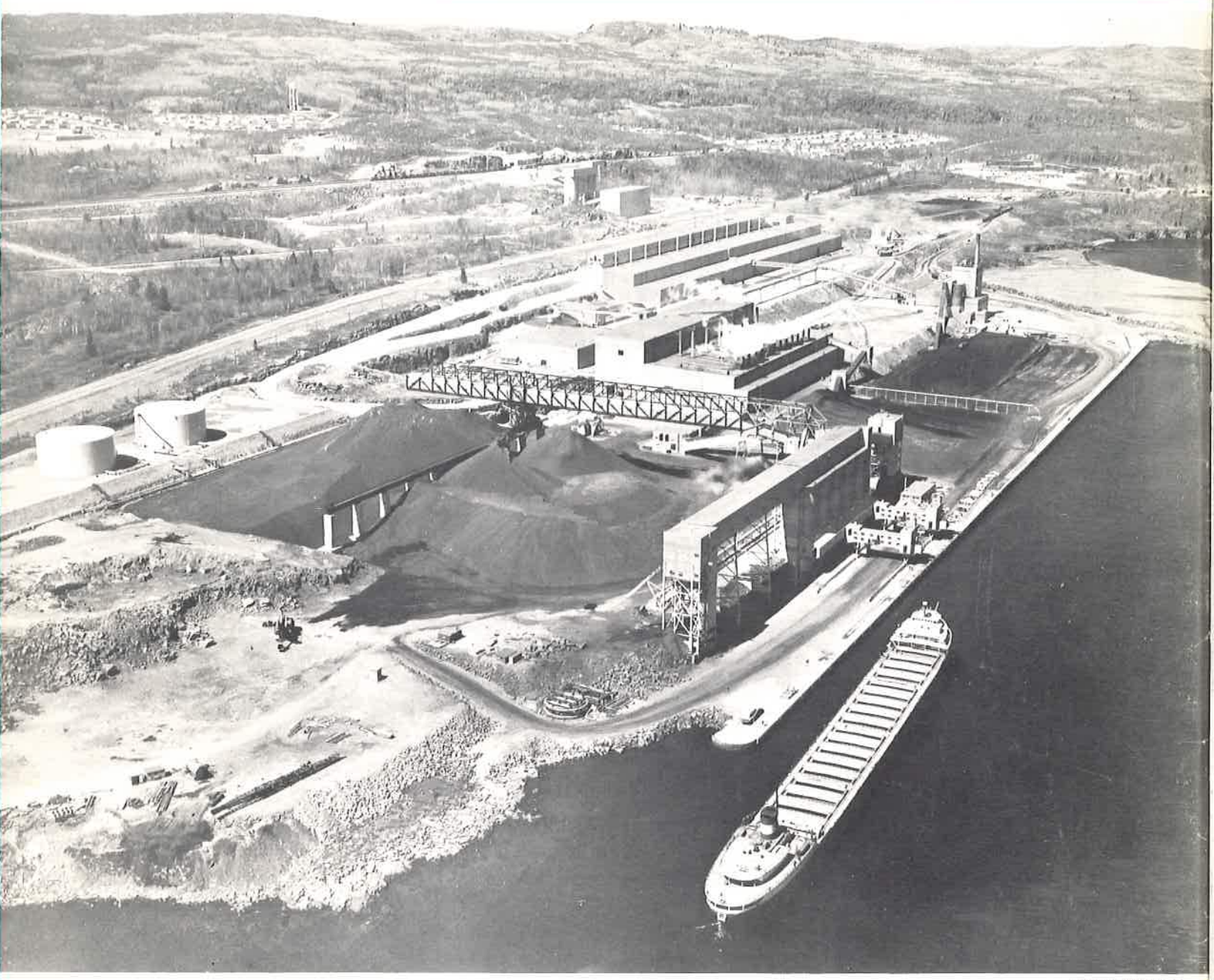
FEDERAL

The U. S. Bureau of Mines has as its basic functions the promotion of the development and conservation of the Nation's mineral resources, particularly strategic resources and those vital to National security and economic development; and the promotion of safety and healthful working conditions in the mineral industries. The Bureau is predominantly a research organization and engages in a variety of scientific activities. It has a modern Research Center located near Fort Snelling to serve the Upper Midwest area. The Bureau of Mines also works in conjunction with State agencies in promotion of research.

The U. S. Geological Survey is primarily a research and fact-finding agency which collects and makes available information about the Nation's mineral and water resources. It conducts research in geology and related fields; prepares geologic and topographic maps; and supervises technical mineral operations relating to the leasing of public, Indian and other acquired lands. The Survey co-ordinates its activities with those of the State Geological Surveys.



THE MINERAL AREAS OF MINNESOTA



Taconite "factory" on Minnesota's North Shore of Lake Superior: the competition is tough

RESERVE MINING CO.

Minnesota Natural Resources Council
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