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Bright Outlook For '57 Pheasant Season

GEOLOGY IN MINI-WAKAN STATE PARK

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Mini-Wakan State Park has much to remind us of remote events in earth history, and of very recent ones as well. The remote part is represented in the material of the boulders, along the lake shore and in the shelter house and its surroundings, and in the small stones, the pebbles, of the beach. Very recent geological events are represented in the way the boulders are piled up along the shore and in the fact that the pebbles and sand have accumulated in the form of a beach.

Let us look first at the boulders. Obviously they are of many kinds. Most of those along the shore are stained and look much alike. If they could be broken we would see how different they are. Those of the fine park shelter are less stained, and their nature can more easily be made out. Almost all have, of course, been found in the vicinity. But beyond that most of them came to the vicinity from far away. They were brought here by glacial ice. By glacial ice, furthermore, which was here as recently as, perhaps, 10,000 years ago. Glacial ice at one time covered a vast expanse of the North American continent, moving out in all directions from centers in Canada. In its slow movement it froze onto the soil and subsoil of the country over which it moved. It also freed and carried along blocks of underlying bedrock which had been loosened by weathering. This load of dirt at the bottom also ground away the solid rock over which the glacier moved. The net result was that when the glacial ice spread into Iowa, it was carrying a great load of debris in the bottom. The climate slowly changed, the ice disappeared, and all that load at the bottom was left as our subsoil. In Iowa it probably averages over 100 feet in thickness. The topsoil,

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Another plump Iowa ringneck comes to the end of the line. Results of brood counts show Iowa's 1957 production is slightly ahead of 1956 indicating good ringneck shooting this fall.

By Richard Nomsen
Pheasant Biologist

Arguments may run hot and heavy among Iowa sportsmen about kinds and gauges of guns, size and effectiveness of shot and breeds of hunting dogs, but it's a safe bet you'll get no argument on one score—the magnificent ringneck represents outstanding upland game shooting and the annual pheasant season is looked upon as a highlight of fall hunting.

A couple of facts about the Iowa ringneck has placed him high in the hunter's esteem. He has continued to provide shooting where other game birds have failed to prosper, and, what's more, he has held his own through good years and bad.

The popularity of the pheasant has prompted the Iowa Conservation Commission to carry on extensive annual surveys in order to keep a bearing on him. An overall picture of what the pheasants were doing from month to month during the year is drawn from frequent checks by conservation officers, rural mail carriers, farmers and game biologists.

Records of similar studies taken during previous years are kept by the biology section and a comparison of these with the latest results reveals how well the birds are doing this year.

Pheasants were being counted less than a month following the final shots of the 1956 season. This first census of the new year closed the 1956 studies and ushered in the 1957 program. It was designed to determine the sex ratio, or number of hens per cock, of the winter pheasant population.

First of all, we learned the results of the previous season. What effect did several hundred thousand hunters have on the rooster pheasant population during the 25-day season?

After an investigation in which well over 100,000 birds were checked, it was found that hunters shot about 66 per cent of the 1956 fall pheasant population. During the winter months an average of 3.3 hens was recorded for each rooster seen, and the percentage of

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The use of the rattle as a warn-
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of the rattlesnake and does not
necessarily precede an attack.

BERNICE BACK ON THE JOB

A recent report from Austin, Texas, states that Bernice, most faithful of all state workers, is back on the job again. Bernice is the little hen quail at the Tyler quail farm.

Last year she set a world's record by laying 311 eggs. This was equal to taking only Sundays, Labor Day and Christmas Day off. This year she laid 28 eggs in each of the months of March and April and had a perfect record for May, according to the hatchery superintendent.—*Texas Game and Fish Commission.*

The opossum is our only North American mammal that carries her young in a pouch. The little opossums are born just 13 days after their conception and are smaller than a bumblebee in size.

The state legislature this year set up machinery for regulating and controlling the use of the state's water resources. It acted none too soon.

The first decisions of the officials in charge of administering the new law are to be made this week. A conflict of interest must be resolved in these decisions.

Farmers are seeking permits to draw water from natural streams for irrigation purposes. The state conservation commission and sportsmen's organizations are opposing granting such permits.

This conflict of interest is not just a contest between farmers and sportsmen or between pleasure and the business of making a living.

It is another chapter in the continuing tug of war between profit making interests and public interests. It becomes sharper as the drain on our natural resources increases. It has been going on for years as our wild life and recreational areas and our mineral, timber and water resources have diminished under the impact of a growing population.

Where water is concerned, the pressure of demand on supply is just beginning to be felt in Iowa. Irrigation has not been an economic necessity. The trend toward more irrigation is just beginning. But if a few farmers, here and there, find it profitable to go to the expense of irrigating, others will follow if they can.

If the use of water from natural streams is less expensive than pumping from underground sources, the demand for permits to use surface stream water will increase.

Without careful control and foresight with respect to future needs, it is not conceivable that many of the state's streams could be turned into arid weed patches during the summer months.

Much of the state's lush beauty, in which all Iowans take pride, could be seriously endangered.

Fishermen would be only a few of the sufferers. Farmers downstream would be denied the use of watering places for their stock. Water tables supplying shallow wells in the bottom lands would be lowered. Villages, towns and industries could lose water supplies upon which they now depend. Future development of industry could be seriously handicapped.

The sensible approach to making use of the state's water supplies for irrigation, while at the same time protecting the broader public and private interests, would seem to lie in conserving the water runoff in the spring and during heavy downpours in the summer months.

The public interest would be better served if farmers wishing to use surface water for irrigation would privately or collectively provide for the storage of surplus water running when it is available.

If irrigation from reservoirs is not yet profitable, it would be neither wise nor equitable to make stream irrigation profitable. It wouldn't be wise because this would benefit only a few at the expense of many others who would be denied the use of natural streams for either pleasure or profit.—Editorial, October 1, 1957. Des Moines Register.

ROUGH FISH REMOVED FROM

Conservation Commission personnel waged war on two Iowa lakes during September in fish management project designed to rid the lakes of rough fish and re-establish game fish habitat and game fish angling.

The two lakes receiving complete chemical "kill" were Blue Lake near Onawa and Five Island lake at Emmetsburg. Considering the lakes as individual units, either

would go on record as the largest undertaking in the history of the Commission's fisheries department. Collectively, the work involved treatment of approximately 1,100 acres of water and was completed within a two-week period.

Although the circumstances leading up to treatment of the two lakes differed, the problem was the same—heavy populations of rough fish such as carp, buffalo and shad!



Jim Sherman Photo

Application of rotenone was made on a portion of Five Island by this special spray plane. Literally hundreds of thousands of carp line the shore indicating the effectiveness of the chemical.



Jim Sherman Photo

A fine spray of rotenone is applied to Blue Lake and the fog from the applicator nozzle gives an idea of its thoroughness. Barrel in the center of the boat holds the chemical which has a suffocating effect on fish.



Jim Sherman Photo

One of the boats used during the Blue Lake project was one shown applying rotenone to the surface of the lake. Note the small draft which enables the boat to treat shallow areas.

BLUE, FIVE ISLAND LAKES

presence of these species dominated the game fish, taking most of the available food and endangering spawning and protective habitat.

Drought was the big factor leading up to the treatment of Blue Lake. Once considered more than 100 acres in size, Blue Lake in recent years has dwindled to a little over 200 acres. With reduced habitat, rough fish got the upper hand, working an effective "squeeze play" on gamesters.

Combined Factors

A combination of factors led to the treatment of Five Island. Reduced habitat because of drought, combined with severe winter "kills" caught Five Island's water level at a dangerously low point. The winter "kills" not only took a heavy toll of desirable fish, but prevented an ideal opportunity for rough fish to take over. So complete was the domination of rough fish in recent years that bottom samples taken before the treatment September 23 failed to disclose any bottom food. Such a situation indicated to biologists and fisheries experts that fish life was so abundant they were actually taking more food than the lake was able to produce.

Armed with facts supplied by preliminary work of the biology section, fisheries personnel applied rotenone to Blue Lake September 16 and to a 100-acre area of Five Island September 23. A specially equipped airplane sprayed the other 800-acre area of Five Island

with effective results.

During both projects, commission biologists kept a constant check on the dosage of the suffocating chemical and continued their investigational work. Conservation officers patrolled both lakes constantly in carrying out rescue of game fish that showed signs of distress. These fish were placed in holding tanks for transfer either to larger freshwater tanks ashore or were placed in nearby freshwater streams.

Saleable fish were sold on the basis of competitive bidding. Non-saleable fish were buried. Rough fish removal crewmen stayed on the job at both Blue Lake and Five Island to properly dispose of undesirable fish.

Observations made by fisheries personnel and biologists after treatment indicated that both projects were highly successful with a "kill" in excess of 200 pounds of rough fish per acre. Preliminary investigational work also was substantiated with disclosure of few game fish by comparison with the rough fish total.

Post-treatment work is continuing at both lakes and have further verified the effectiveness of the treatment. Seine and trawl checks in recent weeks have turned up only one fish classified as undesirable!

Toxicity tests are continuing at both lakes in order to determine when restocking of game fish can safely begin either this fall or next spring.



Jim Sherman Photo.

An aircraft engine operates this State Conservation airboat. Spraying bar and nozzles may be seen at the front of the boat. This craft also draws little water, making it ideal for treatment of shallow areas.



Jim Sherman Photo.

A wriggling 18- or 20-pound buffalo in a dipnet is king-size work. Here Conservation Officer Dick Tellier of Fort Dodge "muscles" one in. Conservation Officer Billy Basler of Lake Park is at the helm.



Jim Sherman Photo.

Non-saleable carp are transported from boat to shore for disposal. Most are buried. Fish removal crews remained on the scene both at Blue Lake and Five Island to properly dispose of all non-saleable fish.



Jim Sherman Photo.

Salvaged buffalo are weighed and sold on the spot by Conservation Commission employees during Five Island project. Buyers from the Emmetsburg area look on as they await delivery of their fish.



DR. ARNOLD O. HAUGEN

HAUGEN DIRECTS RESEARCH UNIT

Dr. Arnold O. Haugen has assumed his new duties as Leader of the Iowa Cooperative Wildlife Research Unit at Iowa State College.

A native of Decorah, Dr. Haugen attended Luther College, the University of Washington, and received the B.S. degree from Washington State College. He holds the master of science degree and Ph.D. from the University of Michigan.

For the past eight years, Dr. Haugen has served as Leader of the Alabama Cooperative Wildlife Research Unit, headquartered at Alabama Polytechnic Institute. From 1946-49, he served as professor of wildlife management at Michigan State University. He also served for eight years as a member of the Michigan Department of Conservation where his duties included management of two wildlife experiment stations.

Dr. Haugen's primary work in the past has been with quail, deer and waterfowl. His doctorate work was on the cottontail rabbit. Dr. Haugen is the author of a number of articles on archery and hunting with the bow.

Dr. Haugen succeeds Dr. Edward Kozicky who is now serving as conservation director for the Olin-Mathieson Chemical Company.

The Giant California Condor do not breed until they are four or five years old. Normally they do not nest more often than every other year, probably because the young condor must be fed and cared for by its parents until it is more than one year old.

The stoat, or ermine, is a fierce member of the weasel family, preying on rabbits, hares, birds and smaller creatures. Its white winter coat, in which it is called ermine, is due to climatic conditions, pure white fur coming from Northern Europe.

Paul D. Kline
Game Biologist

So you're gonna pursue the fluffy-tails. Well pal, you'd better pick your spot, 'cause if our surveys are any criterion some localities will provide much better hunting than others. Not that cottontails cannot be found in all of Iowa. Most places will furnish hunting as good as in recent years—but the bunnies are definitely on the increase in others.

"Rabbit surveys! Whoever heard of rabbit surveys?" That is a typical question, and not a bad one. Ask any biologist or conservation officer of the Conservation Commission. They know the answer because each of them takes part in our rabbit surveys. Twice a year every conservation officer and biologist makes a roadside rabbit count or census by auto. If you thought the federal government is pestiferous in censusing you once every 10 years, just be glad you're not a rabbit!

The two annual surveys are conducted in February and July of each year. February counts give an indication of cottontail breeding stock—how many rabbits are available to produce young-uns for fall hunting. July censuses help in determining how successful the adults were in reproducing young rabbits, or how abundant we expect bunnies to be when hunting season comes around. Along with the July roadside counts we keep track of young versus old rabbits observed.

All surveys are conducted over predetermined routes which have been used since 1950. The idea behind the surveys is to compare results of present censuses with those conducted in the past and to compare results from one area to other areas in Iowa. All this requires uniformity of method. Hence, all survey routes must be over similar roads (gravelled secondary) and be of similar lengths (30-40 miles). For the winter census, officers and biologists are asked to drive over their routes sometime between February 15 and 28, at 25 m.p.h., and start early enough so that they can finish before daybreak. Surveys are conducted only when the weather is not severe—extremely cold, windy, foggy, raining, snowing, etc. Each man conducting a census records every rabbit observed as well as the number of miles along his route.

July censuses are conducted similarly except they begin at sunrise and end sometime after. Rabbits like the roadsides during early mornings in mid-summer. Perhaps they can better sun themselves and dry the dew from their foot-sies. At any rate, shortly after sunrise is the time they can best be seen from automobiles during July.

The number of rabbits seen along a route plotted over the number of miles traveled gives an index to the rabbit population. For convenience we express the index as rabbits seen per 10 miles of route. Because weather factors affect the surveys to a considerable extent, the index obtained from one rabbit route may vary considerably from one day to another. All surveys from each of the nine agricultural areas (northeast, southwest, central, etc.) are lumped together to minimize these possible variables. In other words if seven separate surveys are conducted in the northeast agricultural area, they are all lumped together to form a single index of rabbits seen per 10 miles of route. This index can then be used to compare with indices obtained in other years from the same area and with indices from other agricultural areas.

Obviously, the indices are not an exact count of numbers of rabbits within a given locality. Anyway, who cares whether there are 50 or 500 rabbits in a section! The important thing is: How many will we see when we go hunting? The indices give an indication of whether bunnies are more or less abundant or where they are most abundant—and that's what we want to know.

Sixty-four separate counts were made for the July, 1957, rabbit survey. An index of 4.9 (4.9 rabbits seen per 10 miles of survey routes) was obtained for the entire state. This can be compared to the 1956 index of 4.0. Things are looking up! Perhaps, but this does not necessarily mean that rabbits have increased over all of Iowa. One area, the northeast, shows a smaller index in 1957 (2.9) than in 1956 (3.0). However, the decline is negligible and may indicate very similar hunting this coming winter as compared to 1956-57.

Indices from other areas showed moderate to negligible increases in rabbit populations. These included the northwest, north central, west central and central agricultural areas. This means cottontail hunting should be little if any better than during 1956-57 in those parts of Iowa. Some of your favorite spots may be better, poorer, or about the same—we are writing of each area as a whole.

The four remaining areas (southeast, south central, southwest, and east central) all have higher indices than in 1956. Rabbits have apparently increased in those areas. Most noteworthy are the changes in indices from 4.8 to 6.7 and 6.8 to 8.8 respectively for the south central and southeast agricultural areas. Things are really jumpin' down there!

Let us compare indices from one area to another. Lowest counts were obtained in the three northern, west central, central and southwest agricultural areas. Av-

erage index obtained from these six areas was 3.6. From the east central, southwest and south central areas an average index of 7.1 was calculated. Now we see that a definite pattern has emerged. Rabbits are most numerous in the southeast corner of Iowa. The farther southeast we go the more abundant they become.

Good rabbit hunting should be found in most counties from Lucas and Wayne in south central Iowa eastward to Lee and north to Louisa in the southeast. Other counties north of these have good populations of rabbits. Of course hunting success will vary between good and poor from one locality to another. We are speaking of large areas.

Why rabbits are more abundant in southeast Iowa than elsewhere may be explained by cover conditions. Southeast and south central Iowa are noted for their large amounts of brushy habitat. Cover of this sort is necessary to sustain large numbers of cottontails. Northern sections of Iowa have little of this rabbit cover. North east Iowa has much woodland. However, instead of brushland it is hardwood forest—not especially good rabbit habitat. At any rate southeast Iowa is where we expect rabbits to be abundant under normal circumstances. So brother, if you're a-going rabbit hunting head southeast.

SALESMAN NOTES HIGHWAY DEATHS

Traveling Salesman Lou Wermer recorded 3,132 different animal deaths during 1956 that had been killed on the highways of central Missouri. He spotted the automobile prey while driving a total of 42,000 miles during the year.

In a letter to the Conservation Commission, Wermer cited a recent report of R. Van Bibber of Kirksville, who annually records wildlife killed on the highways of northeast Missouri and who counted 451 animals in his travels in that region last year.

Rabbits accounted for over third of the huge Wermer total with 2,056 dead bunnies seen. Squirrels tallied 293 deaths, opossums, 346; skunks, 241; raccoons, 164; woodchucks, 14 and foxes 11. There were four civet cats, two quail and one prairie chicken.

Wermer, whose traveling area cuts through some excellent hunting country, journeyed over a territory bounded roughly by Glasgow, Rolla, Versailles and Lebanon, and all his observations were in this range. He plans to continue his observations through 1957.—*The Conservation Volunteer.*

The bite of the short-tailed shrew is poisonous, owing to a secretion in the salivary glands.

ANOTHER PARK INVASION THREAT

At times it almost seems that a deliberate effort is underway to destroy the usefulness of our choicest national park and wilderness areas.

One recent illustration of why this feeling arises is the application of an oil and gas company for exploration rights in the Kaibab National Forest.

The requested 106 square mile lease would extend about 23 miles on either side of Arizona State Highway 67, leading to the north rim of the Grand Canyon, and along eight miles of U. S. Highway 89.

Although more remote than the south rim approach to the Grand Canyon, the Kaibab Forest route has been the favorite of thousands of vacationers for some 20 years.

With increasing pressure on other national park and recreation areas, this north rim is certain to become one of the most popular natural recreation areas in the southwest if it is not allowed to be spoiled by commercial development.

Oil and gas exploration work would be destructive enough in itself. Should an oil and gas strike be made, it is a safe prediction that this would mark the end of this area as a national park or recreation spot.

The explanation for increasing pressure on the part of private interests to take over these public lands is a simple one.

As other available lands are prospected, dug up, cut over and otherwise despoiled, only those lands in the national park and refuge areas remain to be probed. The continued pressure of economic interests to move into them is a natural result of the country's growth and development.

But a realization that there is no organized plot to invade public lands in no way decreases the threat to these scenic and recreational areas. Conservationists should resist these pressures wherever they appear.—Editorial, September 12, 1957, Des Moines Register.

WHAT IS A FISHERMAN?

Somewhere between a pre-dawn gulp of coffee and a dog-tired-but-happy grin at dusk, there lives a buoyant spirit called a fisherman.

Fishermen are numerous and varied. They are short, poor, tall, rich, eccentric, boys, lawyers, men, bakers, clerks and people. They are found in, on, around, nearby, close to, milling about, going to, coming from, or talking about lakes, rivers, streams, bayous, creeks, locks, dams, tarns, impoundments, basins, bays, inlets, sloughs, head-waters, marshes, backwaters, falls, or, anything wherein a fish might possibly swim.

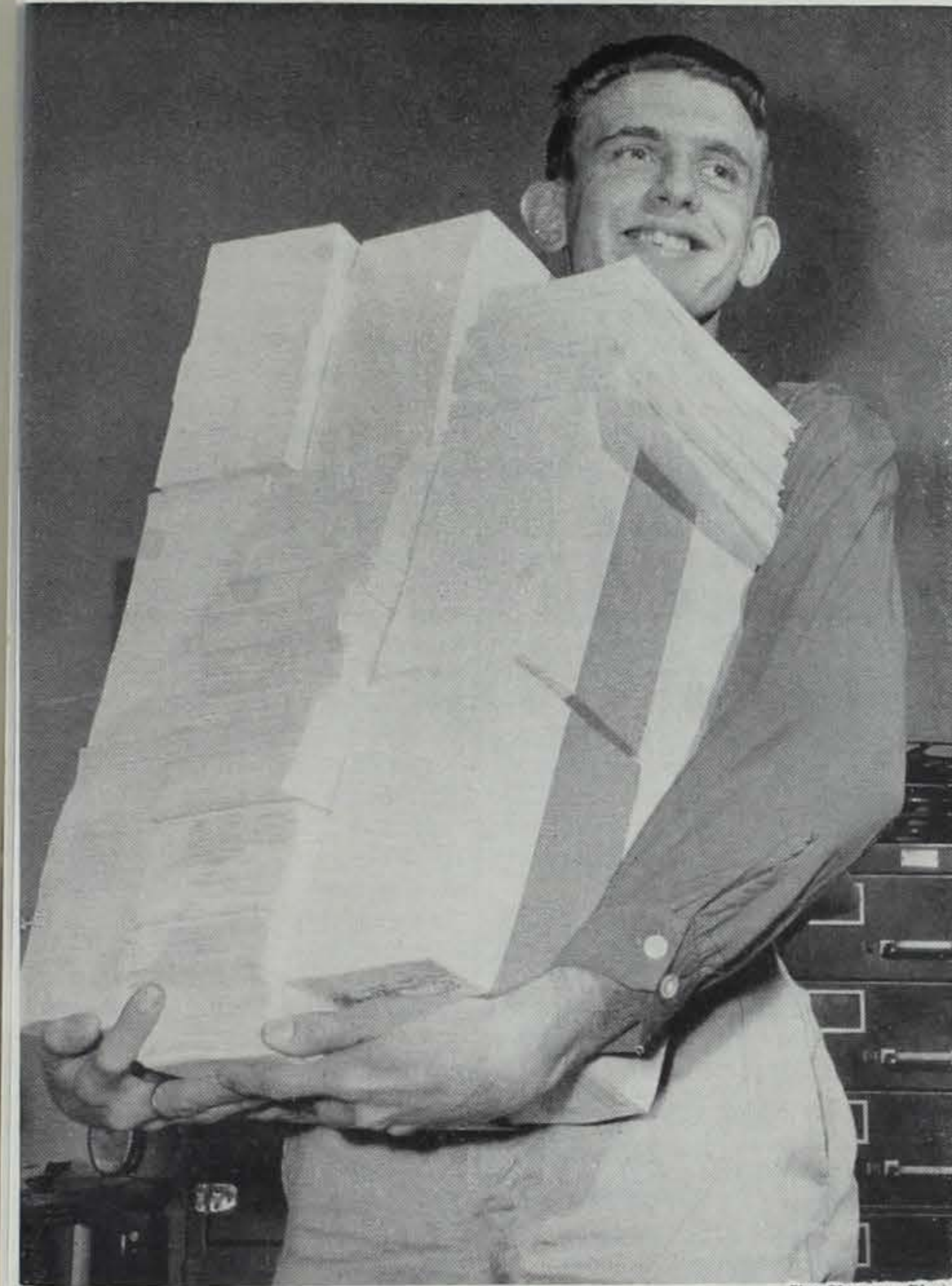
What makes a fisherman tick? Who knows! But here are a few strange but true facts which may help you understand him: A fisherman is a fellow who will do without new shoes in order to buy a new fly rod; he is a fellow who's not much for gardening, but will dig worms with his bare hands; he is a fellow who hasn't the patience to sit through a movie, but will sit 14 hours in a boat; he is a husband who takes his wife fishing on Mother's Day; he is a nocturnal addict of fishing magazines; he is a normal husband gone crazy, or a bright son gone addled; he is the only man who can look at a low spot in his back yard after a heavy rain, and think not of how

he might drain it off, but rather of how he can raise minnows there; he is the only boy-friend who can sit with his girl in a porch swing on a balmy June night, and wonder whether the bass will be taking minnows or plugs in the morning.

A fisherman is a highly imaginative creature. He imagines that a few good stringers of fish will compensate the budget for the umpteen dollars spent on fishing gear. He imagines that fish bite better when the boat is not loaded down with the wife and kids. He imagines that if the fish didn't rise to feed in the morning, it's only common sense that they just have to bite sometime before dark!

To you, the confirmed fisherman may seem a bit wacky in the head. But remember; whether it's called a hobby, a passion, a vocation, or a sport . . . the pursuit of the finny denizens of the deep is of noble lineage. Indeed, the Keeper of the Pearly Gates was himself a superb fisherman.

No matter what you think of the fisherman, he's a pretty happy soul. And it has been said that the Lord does not deduct from one's life span those hours spent in fishing. Maybe that's why there are so many fishermen. For old fisherman never die . . . they just cast away!—Tennessee Conservationist.



Jim Sherman Photo.
Ron Allsteadt of the commission's public relations section is shown with a supply of two new publications ready for distribution to Iowans. They are a new hunting access folder and park recreation folder. Both are available, without charge, from the Commission office.

RAY TOPS GOOSE CALLING FIELD

Jack Ray of Hope, Arkansas, was named the nation's top goose caller at the Seventh Annual World's Championship Goose Calling Contest held at Missouri Valley, September 28 and 29.

Ray is known to many Iowans and others as a manufacturer of duck and goose calls and as a sports show emcee.

Pitted against a final round field of nine, Ray captured a first prize of \$1,000 and the first-prize trophy. Angus McCain, also of Hope, Arkansas, took second place. McCain is the 1956 World's Champion. Third place went to Dewey Strain of Modale. Thirty-eight callers were entered in the senior division of the contest when the first round got underway September 28. The semi-final and final rounds the following day narrowed the field from 20 to the 10 finalists.

Topping all contestants in the boy's contest was Mike Alger of Missouri Valley. Caroline Strain of Logan took top honors in the girls' competition.

Entrants were from Iowa, Nebraska, South Dakota, Missouri, Illinois, Wyoming, Tennessee, Minnesota, Louisiana, Arkansas and Washington.

WANT LIST OF IOWA HUNTING, PARK AREAS?

Two new publications, *Iowa State-owned Hunting Areas* and *Iowa's State-owned Recreation Areas*, are ready for distribution to Iowa sportsmen.

The new hunting area brochure lists all of Iowa's hunting areas with important information on the acreage of each, nearest town, description of the area and principal game found there. A map and handy key identifies each area and marks its location in the county and state.

The recreation folder lists the state's recreation areas, county location, nearest town, custodian's post office and facilities available in each area. A special section gives information on state park facilities, camping with tent or trailer, group camping, cabin facilities, and rates. Like the hunting areas publication, the recreation folder contains a map for easy location of all areas.

Both publications are available free of charge and may be ordered by writing the State Conservation Commission, East Seventh and Court Avenue, Des Moines.

PUBLIC RELATIONS HEAD RESIGNS

Wayne (Sandy) Sanders, Superintendent of Public Relations for the Iowa Conservation Commission, resigned October 21 to accept a post with U. S. Fish and Wildlife Service.

Sanders will serve as game agent for U. S. Fish and Wildlife Service at St. Charles, Missouri.

Sanders, 38, served as Superintendent of Public Relations in charge of the Commission's public relations program since April. Prior to that time he served as a public relations officer, a position to which he was appointed in August, 1956.

He also served as a conservation officer in Woodbury county from 1953 until August, 1956, and in Wapello and Davis counties from 1950 to 1953.

Mini-Wakan . . .

(Continued from page 169)

rich in organic matter, is a post-glacial development.

Ancient Bedrock

But now more about the boulders, cobbles, and pebbles. Most of them are from northern United States and southern Canada. There the bedrock is very ancient. Igneous rocks, formed by the solidification of molten material, are well represented. So are metamorphic rocks, formed when igneous and sedimentary rocks are subjected to great heat and pressure deep within the earth's crust. Sedimentary rocks, formed of sediments accumulated in ancient seas, are much less common. Anyway, sedimentary rocks are soft, and do not survive glacial transport very well. So most of the large and small rocks of our park shore are igneous or metamorphic. They are often lumped together as crystalline rocks.

All of these, in a way, strangers or foreign to this part of the country, are called glacial erratics.

They are erratic in the sense that they differ from the directly underlying solid rock of the earth's crust, the bedrock. Beneath the soil and subsoil of northern Iowa and southern Minnesota the bedrock is sedimentary. Limestone, sandstone and shale are the common ones.

Boulders of ancient granite are probably most numerous among those along the shore and in the walls of the shelter. Granite is an igneous rock. It has a pepper and salt appearance. Gneiss, pronounced "nice," a metamorphic rock, is also abundant. Then there is basalt, another igneous rock, one formed in great outpourings of lava upon the earth's surface. This is black or dark-green in color. Quartzite, another metamorphic rock, is easily identified because of its color, some shade of pink or reddish-purple. Most of the slabs of stone which make up the terrace, the steps to the lake, and the bench, are of this purple quartzite. Since these slabs have flat surfaces it is quite likely that they have come from some outcrop or quarries in southern Minnesota, and not from glacial erratics. Quartzite does form the bedrock of a considerable area of southern Minnesota, and occasionally it sticks through at the surface. However, it is the only metamorphic rock thus occurring at the surface in southern Minnesota. Elsewhere the top bedrock in the southern part of the state is sedimentary just as it is in Iowa.

A very interesting boulder of gneiss underlies the marker at the southeast corner of the shelter. Above that is a granite boulder. The black one above the granite is basalt, and then there are three reddish ones. The middle one is an igneous rock called syenite, and the other two are quartzite.

Most of the stones, big and little, are more or less rounded. How is this to be accounted for? In the first place let us remember that all were once part of the solid bed-

rock. They were freed by that subtle process known as weathering. The action of the chemical constituents of the atmosphere and of the water soaking into the rocks, the freezing of water in cracks, and the prying action of plant roots combined to decompose and disrupt the bedrock, just as it does everywhere. And in this weathering process, working along cracks as it did, hard, weathered and rounded cores were left. In time they too would have been changed to sand and clay, but the glacial ice picked them up before they had gone that far.

In the course of transit by the ice, all of the weathered surroundings have been lost from these boulders. Only the sound portion has been left. Some may have been worn and rounded to some extent by running water. At least they have been cleaned off. This is more the case with the smaller cobbles and pebbles. And, of course, those that lie along the beach have been worn and rounded by more recent wave action.

Some of the boulders are pitted. This also is a result of weathering. The pits represent places once occupied by more easily weathered minerals, for not all minerals weather alike.

Cream Color

Giving more attention to the small stones of the beach, we note that many are light buff or cream in color. These are limestone, and are from formations much younger geologically speaking, than the granite and gneiss. Examine these white limestone pebbles, and you will find them easily scratched by a knife. This is not the case with most of the other pebbles of the beach.

Now let us turn our attention to some other geological matters. First the basin of Spirit Lake, on the shores of which the park is located. This is a depression in the surface of the glacially deposited material. The other lake basins of this part of Iowa are of the same sort. They are abundant here because the area is one of end or terminal moraine. The last glacier, in Iowa, was in the form of a lobe extending as far south as Des Moines. This area of lakes is on the western margin of the lobe. Here the ice stood for a period of years, the front fluctuating even while the ice was in slow motion forward. All the while the debris from the melting ice was accumulating. The net result was the production of a belt of hilly country, with many undrained depressions, the terminal moraine.

So when the ice left, Spirit Lake was born. But the Spirit Lake at birth differed in some ways from the lake of today. At least the shores did. For there was no wall of boulders, no beach of pebbles and sand. For further understanding let us consider the make-up of the glacial deposit. Technically it is known as drift, and it is composed mostly of clay and silt, with

smaller amounts of sand, pebbles, cobbles and boulders. At first the shores everywhere sloped gently down to the water. But then the waves began to wear away the shore and slowly it retreated. The finer materials, the clay and silt could easily be moved by current action. They were carried out into the lake, but the coarser materials stayed near shore.

Then the wall of boulders began to form. Freed from the drift they came into the grasp of winter's ice, and each year were crowded against the receding shore line. Finally, along much of the shore line they formed a protective wall. No longer were the waves able to erode the shore. And lakeward from the shore the sand and gravel beaches remained. The shore had been stabilized and the beaches made without our help. Fortunately for the Iowans of today.

The park is named after the Indian name for the lake, meaning "spirit waters." It is an area of 16 acres, situated on a peninsula at the north end of the lake, almost at the Minnesota line. It is about five miles north of the city of Spirit Lake. Not only at the park but all along the lake shore and in the surrounding country are features which tell us of these geological events of the past.

Forest Fires

There are three kinds of forest fires—Ground, Surface and Crown. Of these, a Crown fire is by far the worst and occurs in predominantly evergreen forests. Winds sometimes whip Crown fires to a spreading speed of 40 to 50 miles an hour. Even birds cannot fly that fast—all life in the forest is consumed by the raging inferno.

Pheasants . . .

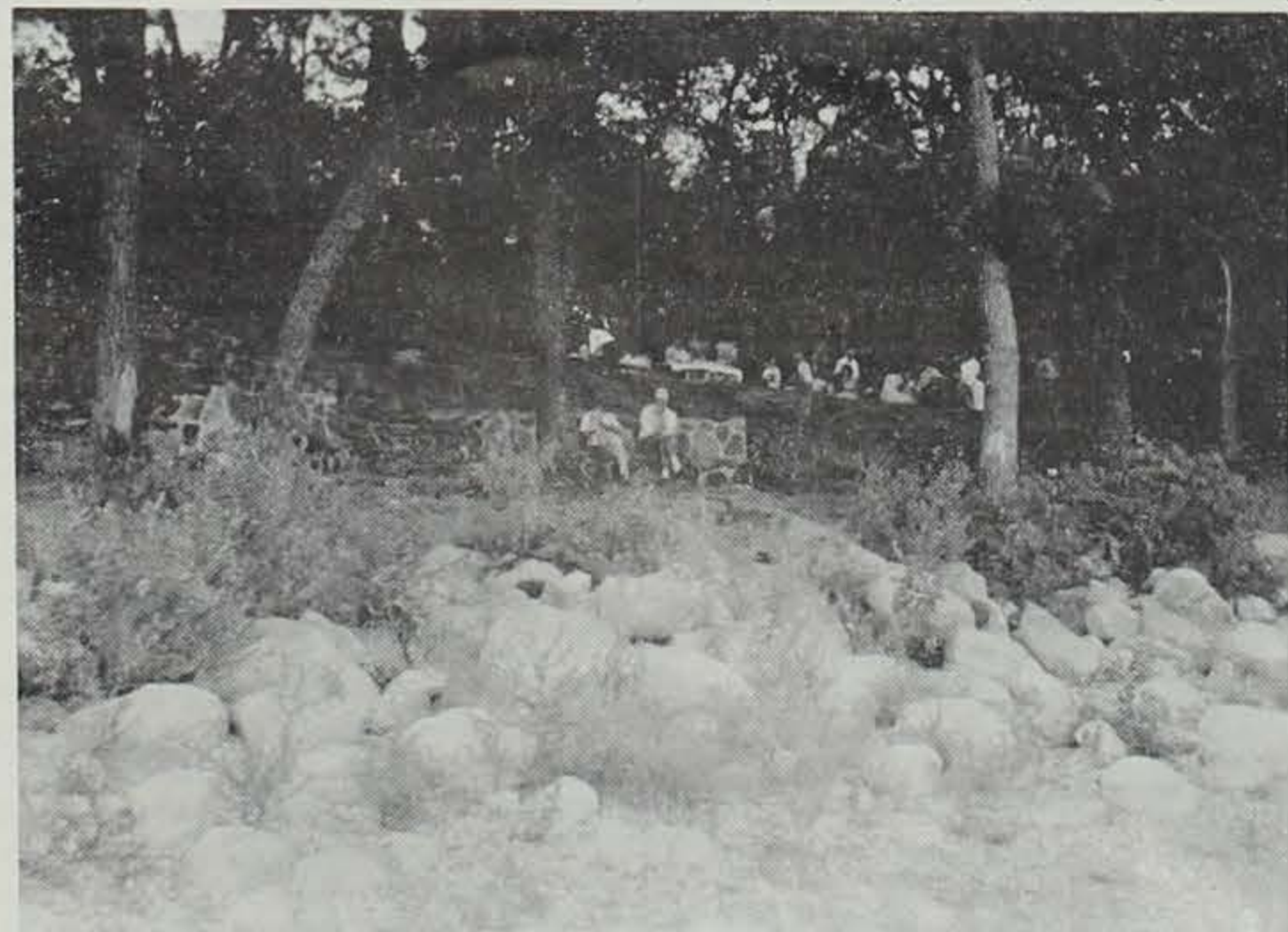
(Continued from page 169)

kill was calculated using the difference in sex ratios from fall to winter.

We also learned that the kill was not excessive. It never has been. For example: hunters shot 66 per cent of the crop in 1954—the heaviest kill ever recorded in Iowa—yet reproduction in 1955 was the best we have had in recent years. Three-fourths of the fall population of cock birds are surplus birds, whether the population is up or down. They are an annual crop and must be harvested as such!

Fall surpluses of cock birds cannot be "stockpiled" and passed from one year to the next. The pheasant range has a carrying capacity that will support only so many birds through the winter. Either the hunter takes the surplus of pheasants in the fall or Mother Nature will take it during the winter.

What of the outlook for the 1956 season? An answer to this question hinges upon two factors—the



Jim Sherman Photo.

Recent geological events in the earth's history are represented in the way boulders are piled up along the shore of Mini-Wakan State Park near Spirit Lake. The park is named after the Indian name for the lake, meaning "spirit waters."

pebbles first and gentle then away to the water. The first half of April were cold and wet, resulting in unfavorable early nesting. During the last two weeks of April temperatures warmed up to a good shape, resulting in good nesting activity. Surveys showed that crowding built up rapidly and reached an early peak. Weather during May cooled and finally ended a couple of degrees below normal for the month. Considering all factors, Iowa pheasants got a later start this year than is considered ideal for a topnotch hatch.

Slightly Ahead

Sight counts were begun in July and continued during the summer. Results of these surveys indicate that the 1957 production was slightly ahead of 1956 with a higher percentage of hens with broods although the average size of the broods is apparently smaller than 1956. Roadside counts during the summer indicates a 1957 pheasant population about on a par with that of 1956.

Prospects then look bright for the 1957 pheasant season—at least comparable to last year which was considered a normal one for Iowa. The one exception to this forecast seems to be in the western counties of the state where drought has cut into the brood stock population in that area.

Looking ahead to the November opening date, some observations are worthy of mention. Good amounts of rainfall means that hunters will be confronted with denser cover this fall, a situation which also means that pheasants will have better cover in which to hide. This situation may actually work to the hunter's advantage since the wary birds may prefer to take advantage of available cover rather than outdistancing the hunter in the open. The condition of cornfields, whether picked or unpicked, also will have some effect on hunter success. Picked corn means less escape cover, so working denser cover thoroughly and carefully may be the hunter's best bet. Best hunting will come on rough weather days when birds will be bunched and less likely to run or "flush" out of gun range.

One departing note on the Iowa ringneck: let's not waste him! If at all possible, shoot over a good dog. If that's not possible, at least mark every downed bird with great care and make every reasonable effort to find him. The gallant Iowa ringneck deserves a better fate than being left crippled by some impatient hunter!

MORE TO VALUE THAN DOLLAR SIGN

It can be interesting—and frightening—to watch a great nation build itself into a mental prison behind the symbols of that great intangible, the dollar sign. This is what we are doing in the United States today; we have blocked our thinking by adopting the \$ as our method of value measurement. It is an odd sort of yardstick, since by the time we agree on its true length we are out of date. But we keep it.

Consider that financial journals (and even small-town dailies are now reporting on stock market trends) tell us the "value" of national production has increased because it is now worth umpteen billion dollars more than it was in fiscal 1956. General Widgets has now become the nation's "greatest corporation" because it grossed (before taxes, you will note) some incomprehensible figure with a \$ stuck in front of it. Fishing is now "big business"—therefore proper and laudable—because practitioners of the craft spent more than 300,000,000,000 cents in 1955.

This is value? Will no journal ask *what* we are producing and *why* we are producing it? Can our yardstick of "progress" measure human happiness or assign a statistical valuation to a dove's flight? Must our forests, waters and soils, the fish of the deep, beasts of the fields and birds of the air... must all of creation be reduced to a financial formula and expressed in staggering statistics?

It appears more likely that we have become prisoners who walled ourselves in with monetary monoliths, sealing off our imagination and aesthetic judgment by applying a single standard of value to sunsets and squirrel cages.

The dollar, dinar, franc, peso, pound, peseta, lira or whatever name the concept of cash is called by in whatever linguistic group... this is a proper valuation in world markets or, perhaps, village squares. But it does not measure the happiness of humanity... nor the freedom of man.

The error of weighing *all* values on an economic scale affects both social thought and conservation, but only the latter concerns us here. For there is a growing belief that no resource is "productive" unless it pays a "profit"; that areas or wildlife in the public domain have no right to be free from exploitation. We are locked into a jail of thought; we have stifled our imagination with a girdle of statistics. We justify the existence of wildlife species because of cash expended by those who would shoot or catch such species, and condemn to destruction as "trash" those other varieties of wildlife which command no dollar appraisal. We seek for the "worth"

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OUTLOOK FOR IOWA'S 1957 QUAIL SEASON

M. E. Stempel
Game Biologist

All indications point to a better 1957 Iowa quail season than that of a year ago with favorable weather conditions during the all-important summer and fall brooding season.

Weather continues to be the main factor in quail production and whether the bobwhite population shows an increase or decrease is dependent upon it. Weather also is a big factor in quail survival through summer and on into fall when brooding birds are striving for adult growth.

To get a better general picture of the 1957 quail population, let's backtrack a bit for a look at weather conditions during the quail hatching cycle.

When quail paired off in April, the weather was cool but warmed early enough to permit good early nesting conditions. Early nesting was followed by ideal dampness during August and September. Such weather conditions at this time in the season are particularly significant since it probably enabled mature birds to replace losses they might have suffered in local storms. When taken at "face value," local storms may be destructive to quail broods, but they may also result in ideal conditions in the weeks that follow because of good quantities of moisture.

Also contributing to the 1957 picture is the fact that good hatching weather has been the rule in Iowa for the past four years. Such a situation means that favorable weather and hatching has helped

build a good bobwhite population for 1957 from the brood stock that has accumulated during the past four years.

Excellent Shooting

Studies of Iowa's quail population by biologists and conservation officers indicates bobwhites are about equally distributed over the primary range of southern and southeastern Iowa counties. With the right cooperation from the weather, hunters should have excellent quail shooting in these counties. Indications also point to good percentages of young quail in the coveys which tends to hold birds down. The heavy scented young birds also make the work of dogs easier and the hunt more sporty.

On the subject of dogs, "Fido" is certainly a great asset for quail hunting and hunter success may well be determined by the work of a good dog. A survey in Iowa's primary quail range during 1956 bears out this fact. During the 1956 season, hunters who used dogs had the high success of 1.1 man-hours per bird, while those who hunted without dogs spent 1.8 hours afield for each bird.

Reviewing the 1957 outlook, it would appear to be one of better quail populations than that of a year ago which was considered about on a par with 1955. Southern and southeastern counties continue to hold up well. Weather conditions during the 1957 season will have an effect on hunter success with top shooting coming on cold days when birds are coveyed. The best shooting also will go to those who have dogs to comb and retrieve in the heavy cover areas.



Jim Sherman Photo.

Whistle counts tallied by Conservation Officers indicates an increase in Iowa's 1957 quail population. A good retriever is a valuable asset to the quail hunter, particularly in heavy cover that adds to the difficulty of finding "downed" birds.

Value . . .

(Continued from page 175)

of wilderness and find no credits unless it be opened for tourist travel—which is to say that it's then no longer a wilderness. Thus, earth's wild places have no merit.

It is difficult, in a mood like this, to understand why a man is jailed for burning his house for insurance money and lauded for burning his soil for crop money. It is easier and quicker to build houses than soil.

We cannot think clearly about conservation if we measure worth only in dollars, because there is no "profit" in plotting mankind's future. Our planting is predicted on what can be sold a decade from now, and our society's financial rewards are reserved for those utilizing the tools that ravish earth. We have locked our creative efforts in a concentration camp behind the barbed wire of arbitrary values.

We must develop other symbols to plan for balanced living for all creatures, to break down the walls of our stifled imagination and honor man for something more than exploitation.

We must fight our way out of the concentration camp—or the race of men will die within its walls.—Dan Saults, Assistant Director, *Missouri Conservation Commission*.

"COB WEBS": HOW THEY WERE NAMED

Spider's silk is among the strongest of all fibers—natural or artificial. In terms of clinging power and elasticity it probably has no equal. Loosely-built houses of medieval England offered a haven to the tiny animals, so their sprawling nets were met with very often. They also abounded along forest trails.

Few everyday annoyances were worse than that of walking into a web, then trying to pull it from one's face and hair. Evidently this was a commonplace experience, as it still is in our countryside today. Islanders of the period joined coppe (head) with web (net) to form coppeweb as a name for the spider's trap.

Like many other everyday terms, it was gradually simplified. By the time Shakespeare wrote "The Taming of the Shrew," playgoers knew what was meant when a character inquired whether the house was trimmed, "rushes strew's, cobwebs swept."

As a back-formation, from the name of its net, the spider itself was occasionally known as the "cob." This usage vanished long ago. Yet the spider's mesh, which seldom snares a city-dweller's head, is still known as a cobweb.—Webb B. Garrison, *Audubon Magazine*.

STUDY REVEALS PIKE MOVEMENTS

A recent study by a special State Conservation Commission crew indicates that while some Mississippi River walleyes and saugers have the wanderlust, most don't travel far before they set up housekeeping.

In a unique fisheries survey in April, a special crew under direction of Biologist Robert Cleary, shocked 1,155 walleyes and saugers in Pool 11 below Guttenberg in northeast Iowa. During the five-day operation, the fish were tagged and then released immediately.

In order to help Cleary's crew determine the movement of the fish and how best to catch them, anglers were asked to send the tags taken from fish to the State Conservation office, via conservation officers, creel census clerks or commercial boat livery operators.

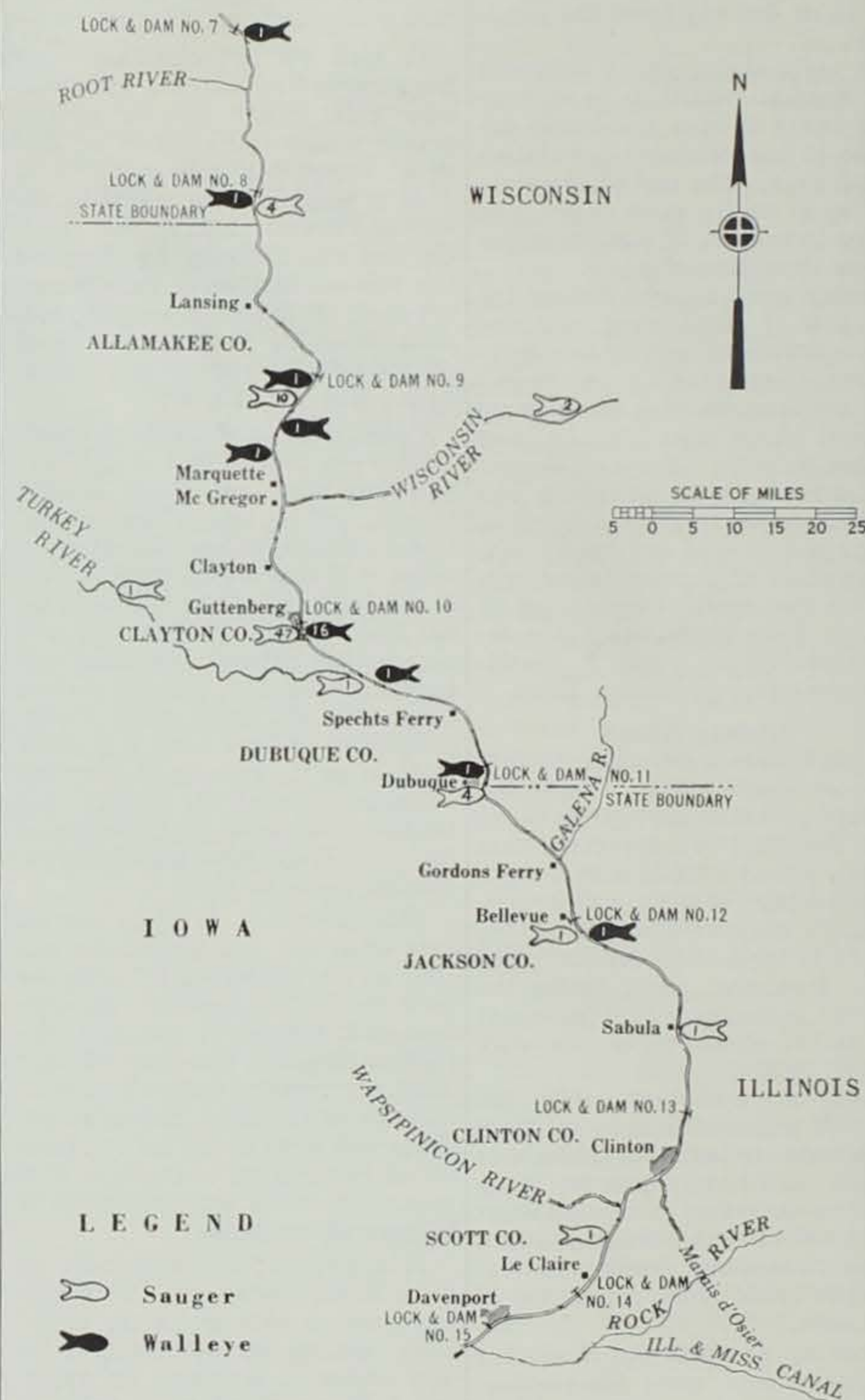
As of September 1, a total of 93 tags had been reported. While movements of some fish were of interest in terms of miles traveled and area in which they were located, most walleyes and sauger were taken in the vicinity of Guttenberg where the shocker first located them. The river channel below navigation dam 10 at Guttenberg is deep, well aerated, and has a good population of food fishes, perhaps indicating the reason why it's a favorite haunt for walleyes and saugers.

Some of the walleyes and saugers had a definite wanderlust in their make-up, and apparently put up with untold inconvenience to reach the areas in which they were caught. Two saugers were taken by anglers in the Wisconsin River at Prairie du Sac, Wisconsin—100 miles from the tagging. One was taken south of Elkader in the Turkey River—the first inland migration record on the Iowa side. Several of the tagged fish were taken in the vicinity of LaCrosse, Wisconsin, lock and dam 7; Genoa, Wisconsin, lock and dam 8; and Lynxville, Wisconsin, lock and dam 9. This means the fish were locked through as many as three river locks on their trek upstream.

The study is continuing and anglers are urged to be on the lookout for tags found in pike they may net in future months. The small aluminum tags are clipped in the lower jaws of the fish. Reporting the tags to Conservation officers, creel census clerks, boat liverymen, or the Commission office in Des Moines may be of great value in determining how you can put more pike on your stringer in future seasons!

The map accompanying this story shows the location of tagged walleyes and saugers as of September 1.

MINNESOTA



Map of the Mississippi River shows the number of tagged walleyes and sauger reported up to September 1. The continuing study will give Commission biologists important information on the movements of both species.

TEN COMMANDMENTS OF GUN SAFETY

1. Treat every gun with the respect due a loaded gun. This is the first rule of gun safety.

2. Guns carried into camp or home, or when otherwise not in use, must always be unloaded, and taken down or have actions open; guns always should be carried in cases to the shooting area.

3. Always be sure barrel and action are clear of obstructions, and that you have only ammunition of the proper size for the gun you are carrying. Remove oil and grease from chamber before firing.

4. Always carry your gun so that you can control the direction of the muzzle, even if you stumble; keep the safety on until you are ready to shoot.

5. Be sure of your target before you pull the trigger; know the

identifying features of the game you intend to hunt.

6. Never point a gun at anything you do not want to shoot; avoid a horseplay while handling a gun.

7. Unattended guns should be unloaded; guns and ammunition should be stored separately beyond reach of children and careless adults.

8. Never climb a tree or fence or jump a ditch with a loaded gun; never pull a gun toward you by the muzzle.

9. Never shoot a bullet at a hard surface or the surface of water; when at target practice, be sure your backstop is adequate.

10. Avoid alcoholic drinks before or during shooting.

—Courtesy of Sporting Arms & Ammunition Manufacturers' Institute.