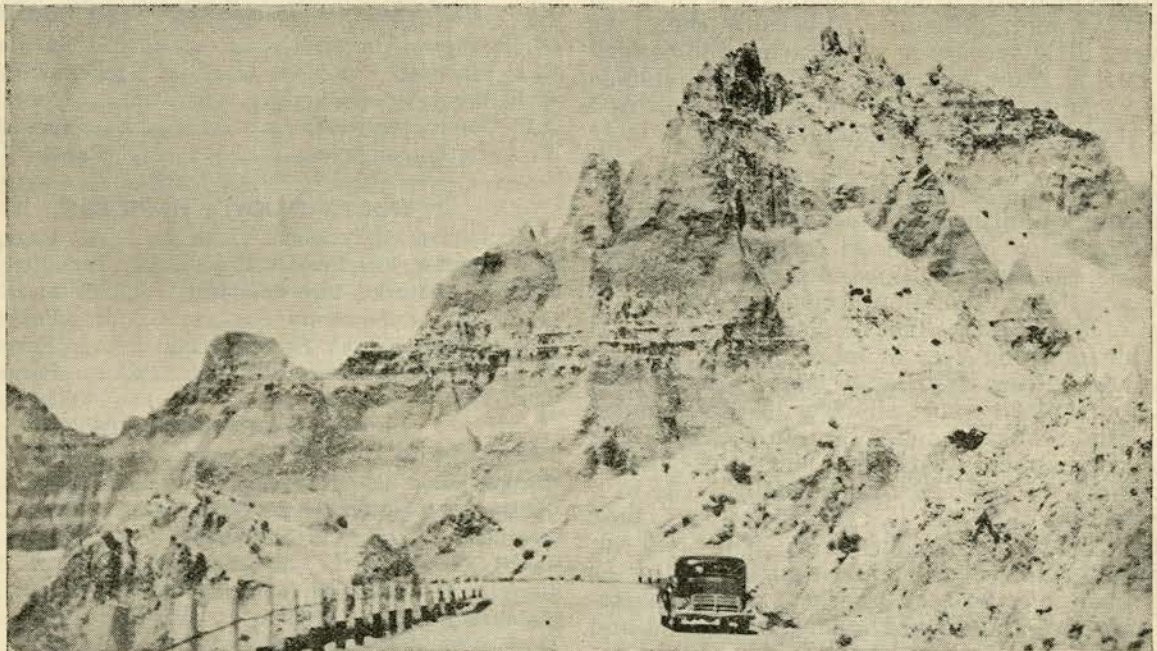


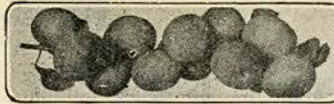
NORTH AND SOUTH DAKOTA HORTICULTURE

DECEMBER, 1937



Scene along the new Badlands highway in western South Dakota.

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BIRD BANDING

by
O. A. STEVENS



O. A. Stevens

The beginnings of bird-banding were more than 100 years ago, but the chief growth of it is since 1920 when it was made a part of the regular program of the U. S. Biological Survey. Since that time over 2,000,000 birds have been marked with the aluminum leg bands and many papers have been published on the results secured. We have learned that our summer residents do return quite regularly to the same nesting places. We have found for several species, at least, that they go to the same locality for the winter. On the other hand, some surprising migrations of birds previously supposed to be permanent residents, have been discovered. A few indications of routes of migration have been found but this is a more difficult field because there has been very little success in recapturing the banded birds during their migration. Many individuals of the common small birds have been captured five to seven years after banding, but few at later dates.

Many of the banded ducks have been recovered through hunting and these results have been of distinct value in wild fowl conservation. "Returns," as the records of banded birds at other points, or after a migration period, are called, are mainly of two kinds. The bander may catch his birds the following year or later, or they may be found dead either there or at some other place. It is important to report all cases of dead banded birds. If there is a bander in your locality, it is best to communicate with him, since the chances are it is one of his birds, and usually he is in a better position to report it. Otherwise the report should go to the Biological Survey. The band can be easily straightened out and sent in a letter or the number may be read and sent with a statement of where and when the bird was found and the cause of its death if known. You will be informed when, where and by whom the bird was banded.

The birds bear only serial numbers. At present they are marked to show year of issue (they may be used a year or more later) such as 36-247122. Twice a year each bander reports to the Survey the numbers of all that he has banded during the six months. There are about 2000 banders scattered over the United States and Canada. A list of those in your State can be secured by writing the Survey. The first qualifica-

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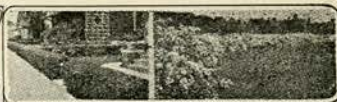
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TABLE OF CONTENTS

	Page
Bird Banding, O. A. Stevens	134
N. D. News Letter, Dr. A. F. Yeager	135
President's Corner, F. X. Wallner	136
Insect Enemies, J. L. Low	137, 138
Secretary's Corner, W. A. Simmons	139
Indian Lore, H. L. Hopkins	140
Book Review, Mrs. F. Briley	142
Index to Volume X	144

tion of a bander is that he should be able to identify the birds. This is no small matter but it is obvious that accurate identifications are essential. Permits must be obtained from both the Survey and the State Game Department. The Survey furnishes bands and report blanks, but the operator must supply traps and feed.

Bird banding has a great recreational and
(Continued on page 141)



North Dakota State Horticultural Society News Letter



A. F. Yeager
Secretary,
 Fargo, N. D.

There is such a thing as getting a wrong slant at things. Did you ever hear a man from Florida or California start in by telling that they can't grow apples there or they can't grow currants there? No, indeed. He begins to blow about what they can grow there and fails to mention the crops that are a failure. Oh yes, Mr. Member, there is a lot we can grow in the Dakotas which our tropical friends cannot. When you start to talk to an outsider why not start off something like this: Fruits, vegetables and flowers? Say, do you know this is one of the finest places in the union for perennial flowers. These closed winters bring the plants through perfectly. One can revel in blossoms from frost to frost and only plant flowers once in many years. Can they do that farther south? They can not. Fruit? Our fruit acreage is doubling every ten years. While people in the middle states are often caught by frosts, we escape. We can raise more plums to the acre than any place in the Mississippi valley and raise a crop every year. Our usually cool, pleasant summers hit currants just right, the middle states are not in it with us. And other small fruits, if you give strawberries and raspberries half as much irrigation and care as they get in the famous fruit sections such as the Hood River valley you can raise more dollars worth of berries on an acre than a section of wheat would be worth. Vegetables? Anyone that can't raise enough vegetables to lay a streak of fat on his ribs every day of the year on half an acre of ground in the Dakotas, would starve to death in Florida. There is room for a commercial horticultural planting near every town in the Dakotas. Many a grain farmer would do well to look into his own possibilities along that line. The aim of our Horticultural Societies should be to make people realize our boundless possibilities, to all in the establishment of commercial plantings where conditions permit and especially to boost for an adequate shelterbelt on every farm, a practical vegetable garden and adequate plantation of fruit, and ornamental plantings around the home to make it a place of fond remembrance to the children who spend their early life there. In short, we would do well to impress the motto our nurserymen friends have adopted; "It's not a home until it's planted." A correspondent sends in a clipping advertising baby apple trees at 4 to 10 cents each. An inspection of the ad shows that these so-called trees are simply fresh cut grafts

such as nurserymen make for planting in the field from which to grow trees. It would be necessary to put these grafts in the garden and cultivate them for two years to get a tree of the same size as the regular trees sold by nurserymen. However, it is possible that if these grafts are well made and well cared for, a large percentage of trees might be secured. The same correspondent asks whether red cedar berries can be planted. Red cedar is perhaps the most difficult evergreen to raise from seed. The berries must have the pulp dissolved from them by lye or other chemicals, before planting. In nature it is the birds that digest the pulp from the seeds. Such prepared seed, if planted in good ground in a shady location may produce seedlings. Since putting out our note recommending lime sulphur as a repellant to keep rabbits from girdling trees, we note there have been some careful experiments conducted which seem to show that the only positive way to prevent rabbit injury is either to kill the rabbits or use mechanical protection such as wire screens. Professor Stevens, seed analyst at N.D.A.C. says that a plant may produce as much as a million seeds in a year and that pigweed seed may remain for 40 years and still germinate well when brought to the surface. Allowing weeds to go to seed, then burying them deeply would look like a poor way to solve the weed problem. An important feature in school ground planting is a number of shade trees planted in a clump at a place where they will not interfere with play ground activities. The Northwest poplar, Chinese elm and ash are suited to this purpose. One other feature remains to be considered—that of planting shrubs about the outbuildings and also perhaps around the foundation of the schoolhouse, particularly across the front. These may well be of the native kinds such as sumac, Red Dogwood, Thorn Apple, Juneberry, Silver Leaf, Chokecherry, Highbush Cranberry (Pembina) and any of the other shrubs that are to be found in the thickets or brush land of the state. By maintaining a continuous day length of less than 12 hours, Garner and Allard of the bureau of plant industry, found that Sedum spectabile might be grown indefinitely without ever producing blossoms. It was grown for nine years in this way. When longer day lengths were provided the plant blossomed normally. Undoubtedly the great length of day in midsummer in North Dakota has much to do with the kinds of plants which prosper here. It is quite likely that some of our varieties bred for this climate differ from those not acclimatized in their ability to utilize a greater number of hours of sunshine.

PRESIDENT'S CORNER

by
F. X. WALLNER



F. X. Wallner
Sioux Falls, S. D.

The 54th annual convention of the S. D. State Horticultural Society was the most outstanding of all I have attended during the past quarter of a century. Near the close of the meeting we were asked to name a state tree. Three trees were suggested, the Cottonwood, the hackberry and the Black Hills Spruce, the latter being the final choice on account of being almost the only tree that no other state possesses and a real thing of beauty. This action by

the society will not be official till the legislature passes on it, but we must talk Black Hills Spruce until the next session, so they also, will name this tree. Another thing up for consideration was the changing of the name of the Society to the S. D. State Horticultural and Forestry Society, which was the name used at the organization of the Society in 1884 and retained until 1889, when the territory was divided.

Because of the Society fostering all tree planting programs and of there being so much activity in forestry, it was believed advisable by some, to change the name. This would also require legislative action. A resolution was adopted asking that Dr. A. F. Yeager be named head of the Horticultural Department of State College at Brookings. An outstanding feature was the large display of vegetables, potatoes and fruits; three potato growers won prizes on the same displays that were first prize winners at the state show at Brookings the week before. Mr. C. F. Benike won first on fruit. It was by far the best showing of produce at any convention in the past. The time was too short for all the papers to be presented and one very interesting paper by Hon. Raymond A. Kelly of Pierre could not be finished. This is a valuable paper that we hope to have in our magazine or annual report. There are two trips under consideration for the summer meeting; one would be a joint tour with the American Association for the Advancement of Science. This would start at Fargo and probably lead to Morden, Mandan, and Brookings and possibly to some Minnesota stations. The other would be at Vermillion, with the tour leading on to Yankton, on the second day. I wish to thank the committee at Clark that worked so hard to make the meeting the success it was. The lunch in the afternoon of both days was appreciated by all and the fine banquet, attended by 115 was fine in every respect. The entertainment, music both vocal and instrumental and the read-

ing, all by Clark talent, was a most pleasant part of the two-days' program. Mr. W. C. Allen of the Dakota Farmer, Aberdeen, attended and made a report on the amount received for the Robertson Memorial Park fund, the details of which will be found in the Secretary's Corner. The amount so far received is but about a third of the sum needed, so please send in your contributions as soon as possible. Miss Senser at last received the long promised volume of old records from 1884 to 1904, which she helped so greatly in transcribing. But three copies exist, one being in the Historical Society's collection at Pierre, and the third being in the Secretary's office at Sioux Falls.

Sunday, November 21st. Today the South Dakota Educational Association is to honor Gen. W. H. H. Beadle, pioneer friend of education, so I turn to page 62 of the first book of the S. D. Hort. Soc. covering the first 20 years of its history. The first address of welcome after statehood was by Gen. Beadle, then President of the Eastern Normal school at Madison, where the 1889 meeting was held. A few lines taken from his address are: "The whole range of small fruits and vegetables is a large subject and one of which information is needed. Our homes are apt to be turned into common boarding houses, for lack of interest in horticulture. With a little care one may raise large quantities of native fruits, adding large comfort to the home and educating the family in the science of horticulture, a science that admits of high thought and much study. The object of this society is to study the best methods of success in these lines as well as to learn and thwart the dangers that are likely to prevent success. In this line, cooperation, both state and national, is a great necessity to accomplish best results. Bismarck, having heard of the Colorado potato beetle, had samples of exact size and color made and distributed throughout the nation. It was shown to the school children; every one was taught to destroy it. When it arrived in Germany, a whole nation was ready to fight it and so great a pest as the potato bug, could not long withstand the combined efforts of the officers and the people of the nation. The action of this society in fighting enemies of past centuries, should be sustained by national assistance, local power is not enough. The enemies of horticulture are a host; they must be studied with care and prevented by law. Horticulture should be studied in our schools and children educated to know the enemies of fruits, plants and trees. We are already doing this at the Normal school. We do not realize the full value of our schools and gardens, else we would more fully protect them." The last sentence in response, by Oliver Gibbs, veteran horticulturist and past Secretary of the Minnesota Society: "The royal welcome is an inspiration to

(Continued on page 143)

INSECT ENEMIES

J. L. Low

There is nothing more attractive and characteristic than a well grown tree or a group of trees on a lawn, in a park, along the streets of cities or villages and in the forest. There is an inspiration in a perfect specimen or a group of trees that appeals to man. Our cities and villages have a glorious heritage in their trees, the result of wise and loving planting by earlier generations.

The last fifty years or so have witnessed the introduction of a number of destructive tree pests while native insects have not been slow in taking advantage of reliable and extensive food supplies furnished by our trees and shrubs with the accompanying protection from insectivorous birds. This has resulted in a gradual increase in insect depredations which for the most part has been regarded as inevitable. A careful examination will reveal few perfect specimens among our trees—it will reveal few trees not affected by insect damage in one form or other and many trees seriously deformed by insect work.

The long period between planting and maturity renders a tree particularly susceptible to insect attack. It requires a generation to produce even a moderate sized tree, while many of our stately monarchs have seen several generations of humans come and go. Tree hazards are immensely greater than they were fifty years ago and we who have benefitted by the foresight of our predecessors should recognize this and take precautions so that we may hand down an unimpaired inheritance. This can be done by recognizing the dangers and anticipating damage rather than by attempting to repair injury and reshape an already badly deformed tree, although there is place for such in attempting to remedy the earlier damages.

The acceptance of insect ravages as inevitable is an inheritance from an age which knew little or nothing of arsenical poisons and had no knowledge of spraying apparatus other than a whisk broom or hand pump—better used for window washing than insect control. Generally speaking we can control insect depredations. This is especially true with our city park and lawn trees although we can do much in our wooded areas by modifying the conditions which affect insect life—by this I mean protecting the birds which are our most effective insect enemies.

Animal life depends on plants, and this is as true of insects as of all other forms. A mutual adjustment or readjustment is constantly taking place. Insects would destroy their food supply if all plants were killed, and, on the other hand, most plants depend to quite an extent on the good offices of insects. There is also a constant variation in the relations between beneficial and other

insects. Birds also play an important part in maintaining this balance.

An insect injurious under the condition of one locality may be extremely rare in another environment. The scourge of today may be noteworthy by its absence twenty years hence. There are variations from year to year, month to month, and within even narrower limits. It is interesting to note that our insect enemies have come mainly from two sources, that is the insect enemy of our trees and shrubs—first we have our forest insects which have found favorable conditions for development in our shade trees and shrubs. Second, we have introduced species which are the result of widespread foreign relations. The European Pine shoot moth, the gypsy moth, the elm leaf-beetle, and the Japanese beetle are a few of the many species which have come from other countries.

It is well known that insects as well as plants require certain climatic conditions in order to do well. Some species, such as plant lice, become abundant in abnormally cool weather. This is due partly to the fact that these temperatures are favorable to their development and partly to the fact that the development of their natural enemies, such as the lady beetles and flower flies, is curtailed by other than high temperatures. This has a practical bearing on our work as it makes it possible to forecast to a certain extent the probable developments of the season.

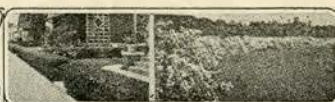
Cool, wet weather has a direct influence on plant life. Ordinarily it is favorable to an unusual leaf growth—an abundant leaf growth means conditions more tolerant of leaf injury than would be the case in dry seasons when leaf growth is at a minimum and the loss of a little foliage is relatively more serious. Reasonably high temperatures and a lack of rain, especially driving rains, are favorable for the development of many leaf feeders. An example of this is the elm leaf-beetle. It appears to thrive in dry hot summers and furthermore, low humidity is unfavorable to the development of the fungus which is a very effective check on the elm leaf-beetle.

Lack of rainfall, especially if over a period of years, reduces the vigor of trees and brings about conditions favorable to borer attack.

Many insects succumb to the extremes of winter. Ordinary cold weather is not as fatal as much as marked variations of temperature. Warm periods tend to revive the insect and when the temperature falls it has a devastating effect, especially if repeated several times.

The length of the warm season has a very definite influence on insect development. A slight variation may make the difference between one or two generations.

Variation in the amount of light has a marked influence on the development of insects and on



the location of the injury as caused by the insect. As you have noticed, injury to trees is more apt to be on the sunny side than on the shaded portion of the tree.

A recognition of these and other limitations is of immense value in control operations. Also in control work it is important that we have an understanding of the insect we are fighting—for all practical purposes we can divide the insects into two classes. The first of these are the biting insects, which can be divided in several subclasses. The leaf-feeding insects include numerous species which attack the foliage, devouring the leaves or portions of them, usually in a somewhat characteristic manner. Some of these modifications have an important bearing on methods of control. In general, leaf-eating insects can be controlled if a poison such as arsenate of lead is thrown upon the foliage in such a way as to be eaten or the insect go hungry. In the case of many species which bite through and devour the entire thickness of the leaf, a poison is just as effective upon the upper as lower surface of the leaf. This is not true, however, of insects which skeletonize the leaves and feed, as such usually do, on the under surface of the leaf. In such cases the poison must be placed on the under surface of the leaf to be effective.

A considerable portion of destructive insects may be classed as leaf-feeders—here the leaf-miner deserves special attention. The young of these insects have learned to feed between the upper and lower surfaces of the leaf and consequently are unaffected by most poisons thrown upon the foliage. Some of the miners may be destroyed by spraying with a nicotine soap solution but only when the membrane of the mined portion of the leaf is so thin that the insecticide penetrates and destroys the young insect beneath.

Borers present difficult problems in practical control since they are well protected from the usual treatments. It is fortunate that the most destructive borers are those that work in the cambium and thus are relatively near the surface. Even these cannot be reached with sprays and except with those borers, such as the bronze birch borer, whose adults actually feed on the foliage, spraying is of no use. Borers restrict themselves to trees with a lowered vitality consequently feeding and treatment to restore vigor is a valuable method to prevent infestation. It is also advisable to watch trees closely, and in the fall cut out all young borers.

Our second division is the sucking insects, of which there are a number of serious pests. They are usually more difficult to control than the ordinary biting and leaf eating insects, since they feed through a slender beak and draw their nourishment from the underlying cells. Dry insecticides upon the surface of a leaf or upon the bark

are practically useless in controlling these insects. They can be checked or destroyed only by applications of some material such as nicotine sulfate which will kill the insects when it is thrown upon them. This group of insects must be destroyed themselves rather than curtailed by the application of a substance which will protect the plant.

The most common of the sucking insects are the plant-lice. They attack a wide variety of plants feeding mainly on the leaves of the plant. Most plant-lice are delicate insects and are easily destroyed by a contact insecticide. The fact that some species cause a curling or distortion of the foliage allows them protection from ordinary sprays. These insects multiply rapidly and consequently a serious outbreak may be possible before the individual realizes they are even present.

The leaf hopper is another serious sucking insect and its very nature makes it hard to control. While young the hoppers feed on the under surface of leaves and at that time may be easily controlled with a contact spray. However, the adult is so active that it is difficult to hit them with a spray.

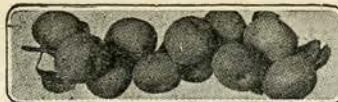
Scale insects include a large number of destructive pests and are also sucking insects. They can be controlled only by the use of contact insecticides. The young are delicate and easily destroyed whereas the adults often require a dormant application of a miscible oil or a lime-sulfur wash before satisfactory results can be obtained.

We have comparatively few injurious insects because most of them are unable to become sufficiently numerous to be ranked as destructive or so abundant as to be nuisances. The reason for this is found in various natural checks or repressive agencies.

Birds are among the best known and most conspicuous enemies of pests. Birds may be compared to the cavalry of an earlier day in that they rally at danger points and quickly clean up an infestation after it has developed to a certain extent.

There are long series of insects which prey upon other insects and are important in preventing widespread depredations. In fact there are times when we do more damage than good by spraying and it would pay as well to refrain from making application of poison at such time.

As I stated in the beginning, we have received a valuable and glorious heritage in the trees planted and cared for by our ancestors. It is up to us to foster that heritage, increasing it as much as possible through planting of additional trees and the wise care of all trees; leaving as our monument to the future not bare skeletons standing as mute reminders of better days but strong, healthy trees standing as a majestic tribute to a people that would not admit defeat to the most adverse of conditions.



SECRETARY'S CORNER

W. A. Simmons

A letter from Dr. J. C. Snyder of Pullman, tells of the program he has prepared for the meeting of the Washington State Horticultural Association at Wenatchee, December 6, 7 and 8, in the Chamber of Commerce Building. The program will be most interesting and as many of our fruit growers as possible should attend. Dr. Snyder is personally one of the most lovable characters in Horticulture and it is well worth the trip just to become one of his friends. As is to be expected in such a fruit growing state, the program will mainly be along fruit growing lines, with considerable attention given to the subject of commercial hand pollination, "Dynamite" sprays, substitutes for Lead sprays, etc.

We wish again to remind our readers that we have in this office a magazine subscription agency and we invite all members and members of our affiliated societies to make free use of it. If there is any magazine you wish to subscribe for or to renew, drop the secretary a card with the list of the magazines you wish to subscribe for and we will be glad to quote you prices, which in nearly all cases will make you a substantial saving over their list prices.

A very interesting bulletin has just come to our desk from the Arnold Arboretum, Jamaica Plains, Mass., in which the subject of rust resistant barberries is very fully discussed by the author, Dr. Ames. It is important to know that there are so many varieties of this shrub entirely innocent of harboring black stem rust spores. The price of this bulletin is 25 cents.

Mr. J. Rowe Webster of Milton, Mass., thinks he has the squash borer licked and writing in the Mass. HORTICULTURE, describes his tactics as follows: He takes an oil can with a long nozzle of small caliber, and fill it with black leaf 40 solution. He then makes a slit in the squash vine, near the ground and squirts in the solution filling the cavity. He repeated this at weekly intervals, till he had treated the vines 3 times, though perhaps so many treatments were unnecessary. He says the borer works down along its burrow till it gets to the nicotine solution, when his home seems to lose its attraction and he either quits the vine in disgust, or dies and does not get down into the root which remains healthy and continues to nourish the vine. I don't know how prevalent the squash borer is, in the Dakotas, but with me it is the limiting factor in squash raising and this method of control looks reasonable.

Editor Rahmlow of WISCONSIN HORTICULTURE has raised the interesting point that in coring apples, it makes a difference whether one starts from the blossom or the stem end. He

says the correct way is to start from the stem end, run the knife down about half way, under the core, then pry upward with it, when the core will come out clean, without waste. Try it sometime, I find it does make a difference.

Here is the present condition of the Robertson Memorial fund:

Amount acknowledged in Nov. Magazine	\$14.00
Mrs. R. D. Wadsworth, Bryant	.25
Mrs. Mary E. Sandoz, Ellsworth, Neb.	1.00
Sam H. Bober, Newell	5.00
Geo. W. Gurney, Yankton	1.00
Mrs. F. Briley, Dell Rapids	1.00
E. L. Crabb, Shoshoni, Wyo.	1.00
T. M. Bailey, Sioux Falls	1.00
Dell Rapids Garden Club, Dell Rapids	3.00
J. L. Low, Pierre	2.00
Chas. McCaffree, Scottsbluff, Neb.	1.00
P. L. Keene, Rapid City	3.00
H. E. Dawes, Brookings	1.00
Max Pfaender, Brookings	1.00
E. A. Gates, Rapid City	5.00
Dr. Geo. Gilbertson, Brookings	1.00
A. L. Ford, Brookings	5.00
Mrs. P. A. Thurlow, Rapid City	.10
T. C. Wenz, Bath	1.00
Enoch Norbeck, Platte	5.00
Mrs. H. M. Smith, Springfield	1.00
A. L. Negstad, Arlington	1.00
W. K. Robertson, North Bend, Neb.	2.00
Dr. Manley Champlin, Saskatoon, Sask., Can.	1.00
J. O. Johnson, Watertown	2.50
H. E. Beebe, Ipswich	10.00
W. H. Over, Vermillion	3.00
W. C. Allen, Aberdeen	25.00
Oscar H. Will & Co., Bismarck, N. D.	5.00
A. Kopperud, Omaha, Neb.	2.00
George Ramage, Lysite, Wyo.	5.00

Total ----- \$109.85

We want to thank all those that have contributed so liberally to this fund and to urge those that have not done so, as yet, to send in their offerings as soon as possible as but one third of the amount necessary has as yet been received. We are especially appreciative of Mr. W. C. Allen of the Dakota Farmer, who has not only borne all the great expense of postage in soliciting contributions from our members but has also contributed \$25. to the fund. We feel that there are few of our life members that cannot afford to help us in this, the Society's project and we are expecting them to do so. They should bear in mind that at the time they joined, they received the full worth of their money, in planting stock and were not promised anything in the future but the annual report. But we have been sending them all the magazine, without additional cost and the matter of continuing to do so is entirely optional with us.

(Continued on page 143)



ARROW HEADS AND INDIAN LORE

By H. L. Hopkins
Clark, S. Dak.

The topic assigned to me for this occasion cannot be comprehensively covered in the time at my disposal and I shall confine my observations largely to the stone implements used and left by the American aborigines.

The manufacture and use of these implements runs back into the mists of the earliest stone age and human beings began using stones just about the time human beings first came upon the scene in this vale of tears.

They were used by the aboriginal peoples of every race and on every continent, presumably long eons of time before either of the America's were occupied by any humans.

Presumptively our Indians followed the Mound Builders and Cliff Dwellers. These also were makers and users of stone artifacts. In fact I have no shadow of doubt but the blood stream of every person within the sound of my voice trickles down from ancestral peoples who made these stone implements and used them in human conflicts and in the game chase. Such is their antiquity.

If the Indian was of eastern Asiatic origin, as leading authorities believe, he doubtless brot the stone implements of that age and the art of making them with him. If however, he was the successor of more ancient peoples, he indubitably found them already here.

Highest authorities, I believe, agree that they were made from hand work. It ranged from crude to very skillful and artistic and those made from quartz were shaped by chipping.

Now as a convenience and as a foundation for the brief consideration of stone artifacts I am going to place all rocks in two very loose, general classifications—igneous and stratified.

Very broadly speaking all stratified rocks are those laid down by water agencies.

Igneous rocks are those having been in a heated and moulten state—such as the lavas and granites.

My subject deals almost exclusively with quartz rock and that is classified with the great igneous family and is a close cousin of the granites.

Quartz also has a numerous and highly intriguing family of its own. It includes flint, agate, hornstone, carnelian, obsidian, chalcedony, onyx, porphyry and many others.

Quartz rock was used for practically all edged, shaped and sharpened implements such as arrows, knives, scrapers, hatchets and spearheads, because it is hard, very durable and has no grain. It breaks equally easy in any direction.

Classifying all rocks for degrees of hardness

on a basis from one to ten and beginning at one with the softest formations, quartz would rank seventh.

I have found arrow heads in this locality made from agate, flint, obsidian and hornstone. They are found almost everywhere, particularly on fields where the top soil is light and silty and blows easily when dry.

These blow spots are usually adjacent to deltas formed by the runoff of the huge waters of the last melting glacial visitant. The silted and gritted top soils in those localities come from the lighter materials of the delta formations, transported to them by the agencies of air and water.

It is my theory that these implements became lost and scattered quite evenly over the whole region, through frequent use during the long period of occupation by all aboriginal peoples, prior to white settlement.

My observation and experience have led me to believe that topography or locality have but little bearing on the local distribution of these relics. From this general conclusion I would except camp sites, burial and battle grounds where accumulations should be above normal.

I am confident that a careful sifting of the first three inches of top soil would yield an average of a dozen or more arrow heads per average acre. They have been buried by the accumulation of decaying vegetable matter and the shifting of surface dirt by winds and water.

During the present drouth period on many silty, varying sized areas, in this general locality, top soils have been carried away by winds to a depth of several inches. In many places as deeply as plowed. The removal of this dirt left rocks, arrow heads and other heavy substances exposed on the new surface.

Indian relics of all kinds found in this section were gathered by large numbers of people and are still being gathered.

A country school is situated in the south central part of this county, in the midst of the largest blow area that I know of. The young gentleman teacher is a nature fan and fired the keen interest of his pupils by his own enthusiasm. They gathered more than 2500 Indian relics of many kinds, largely arrow heads. They have disposed of a portion of their accumulations to one of the higher educational institutions for \$200.00 and started a fine school library.

The total findings, by hundreds of local people, in this general locality, during the past few years would aggregate many thousands.

Many Indian hammers are also found. I have found a number of very small ones—I suspect the loving work of some doting squaw mother for a young hopeful.

They are usually of granite, although I have



found a few of hard sandstone and one of flint. Care was used in their selection by makers. They are fairly uniform as to size, naturally slightly oblong and quite symmetrical. The creases around them were cut by harder rocks, such as flint and quartzite. The creases were made to fasten them to short, stout handles with rawhide thongs. They are said to have been used in human conflicts, in the chase for big game and for general hammer and sledge purposes.

Thousands of beautiful agates have also been gathered with the Indian relics.

When I came to the territory, a half grown lad in the spring of 1878, there was not a shingle or furrow in sight. To me it was a wonder land. A few graceful, living antelope were still here. Indian relics were plentiful. Collecting them at once became a happy fad and I fear it has developed into a delightful obsession.

At the beautiful, heavily timbered, junction of Timber Creek and the James River, in Spink county, is a large Indian burial mound. Several skeletons and many Indian relics, including pottery, have been taken from it. For many years it is said to have been the camp site of Drifting Goose, a noted Sioux Chief. There is another burial mound at Warner's Lake, near the eastern edge of Clark county.

In addition to the things enumerated the aborigines also made many other useful and curious articles, including their raw tanned clothing from the hides of various animals, their graceful birch bark canoes, their supple and efficient bows and arrows and their deadly tomahawks. The marvelous Navaho blanket is still being made.

There were large flint quarries in Ohio and Wisconsin that were extensively used by the aborigines. Flint quarries also existed in France, Denmark and England and were used by their aboriginal peoples during the stone age.

At the Carnegie Institution, in Pittsburgh, is said to be the largest and most complete collection of Indian relics in the world. The Smithsonian, at Washington, also has a marvelous collection. It has been my happy fortune to carefully examine both.

If convenient, a visit to them is richly worth while to any lover of Indian relics and lore.

BIRD BANDING

(Continued from page 134)

educational value. It is primarily a scientific study and will yield the most results if carried out in a systematic manner on a considerable scale. Many people trap only a few birds in their backyards. Some visit island colonies and band hundreds in one day. There are many useful details to learn as one goes along and a visit to a station already in operation is always helpful.

The major plant hormones already known are Auxins A and B, and heteroauxin. Dr. Albert Francis Blakeslee, distinguished geneticist of the Carnegie Institution, reported discovery of a new plant hormone which he calls colchicine. It increases the growth rate of tobacco, phlox, onions, pumpkins, cosmos, radishes, portulaca, digitalis, jimson weed. The growth acceleration seems to be related to a doubling of certain segments of the chromosomes, heredity carriers in the germplasm. Colchicine also renders hybrid plants—which are normally sterile—fertile. Dr. Blakeslee pointed out that this action is as important in plant science as it would be in zoology to confer the power of reproduction on a mule.

Whidbey Island, in Puget sound, containing almost 200 square miles, is the second largest island in the United States. Besides that, it holds the world record for wheat production—117 bushels an acre, field run.

Just to show that it was not a freakish production, Harry Smith of Coupeville this year grew a Red Russian crop that made 100 bushels per acre on 40 acres.

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BOOK REVIEWS

Mrs. F. Briley



Mrs. F. Briley

Hardy Fruits, with special reference to their culture in Western Canada, by C. F. Patterson, Ph.D., Saskatoon, Sask., Can. Published by the author, Price \$3.65 postpaid.

"Hardy Fruits", which covers the culture of fruits in the Canadian Northwest, fills a long felt need among growers of fruit under prairie conditions. Considerable space has been given over to a discussion of the plant and its relation to its environment. For instance, two entire chapters have been devoted to the fruit plant in relation to water and to temperature. Throughout the book the author has striven for simplicity, clarity and conciseness. Especially does the reader find these points outstanding when he reads about the methods of propagating fruit plants.

Budding, which a few years ago was considered as something not to be attempted by any person short of a plant wizard, is explained so clearly that a child who has learned to follow directions, might experiment successfully with it. We in South Dakota are going to be especially attracted to the book because Dr. N. E. Hansen of Brookings College is referred to repeatedly. Many of the hardy apples, cherries, plums, raspberries, etc., that are recommended for this area, are his contributions. His Assiniboine plum is still regarded as the best hardy plum in cultivation. The author ranks Dr. Hansen with Burbank of the United States and with Saunders and McCoun of Canada. "These are household names, and the work of these stalwarts has given lasting stimulus to fruit improvement in America and has made a lasting impression upon the development of fruit growing on this continent."

An author who has relied upon the good works of these four men for much of the material for his book has rendered a lasting service to both pupil and teacher in the Great Plains region of North America.

A. B. C. of Agrobiology, by O. W. Wilcox, Published by W. W. Norton & Co., New York, Price \$2.75.

This book is an account of how the plant scientists have deciphered the code in which the laws of the nutrition and quantitative growth of plants are written. Agrobiologists are people who have discovered that the components of a fertile soil are known, and have established a scale on which quantity of plant life is measured. The

Scriptures give in the story of the small mustard seed that became a tree so that the birds of the air came and lodged in the branches; the seed that was grown on stony ground withered, and that which fell on good ground brought forth fruit. With these basic facts it was not until the middle of the nineteenth century that the great Liebig founded agricultural chemistry. What he did not see was that nature has imposed a limit to the growth of plants that is inherent in the natures of the plants themselves and not necessarily in their surroundings. The development of this concept and its application in modern agrobiological science are the author's special contribution to science and are the points enlarged upon in this book.

Plant breeders are trying to shorten growth cycles of plants. One amusing cycle is stated as beginning with the grasses shrubs and trees consuming materials for protoplasm from the air and soil; grasshoppers consume the shrub, the fowl eats the grasshopper; man eats the fowl, a shark eats the man; the shark is captured and his carcass is converted into fertilizer which thus completes the cycle. It is not unreasonable to suppose that when the science of genetics and the art of plant breeding has been further developed, "the crop plants of the future may be not only like Jack's beanstalk that reached the sky, but also like the gourd that grew up over night to cover Jonah's booth."

As a contribution to a new science the book deserves a prominent place; as a contribution to plant culture and agrobiological science it stands supreme. The volume is well printed, well captioned, and has a comprehensive appendix. "The Norton imprint on a book means that it is, in the publisher's estimation, a book that will live." When a book is written that explains Einstein's sixth dimension for the layman, Norton will publish it.

Week End Gardening, by Sterling Patterson. Published by the Macmillan Co., 60 5th Ave, N. Y. Price \$2.50

Beginning with a living Christmas tree, dug with a ball of earth, with a predetermined place in the garden waiting for it, and concluding with "tucking the garden in for the winter", this volume makes very solid and interesting reading. It is a "man's story, rather than a woman's, yet no woman who loves a garden, (and what one doesn't) and intent upon knowing how to make it more beautiful, yet yearning to acquire this knowledge from an interesting source, can fail to find it fascinating. Authors often tell amateurs how to plant a tree, but Patterson reverses the order by giving explicit directions as to how to dig up a tree or shrub. He gives us a new slant on rock gardens when he tells us how he thinks a real one should look. Unhappy results remind



me of what a friend once said: "Too many rock gardens look as though they had been dragged in by the ears." However the author feels that the choice design, borders, and all matters pertaining to gardens are a matter of opinion, and reminds us of the old woman who kissed the cow. When he speaks of gardens he means all the grounds on the place. "The good life, we feel, is a search for beauty, for contentment, for harmony with the world. Whatever he does, the garden senses that the life which courses through his veins is the same life that throbs in the heart of the oak that towers above him, or that stirs in the grass-roots at his feet."

PRESIDENT'S CORNER

(Continued from page 136)

each one of us, from this auspicious beginning shall go out results far reaching and of great benefit to all, in the future of our state."

At the first International potato picking contest in Maine, the one armed man picked up 72 pecks in 15 minutes; another one armed man picked up 57 pecks, but the champion picked up 86 pecks in 15 minutes. There were 27 expert pickers in this first contest. The week of October 8-15th, seven large refrigerator boats left Portland, Ore., with Hood River apples and pears, for the four corners of the globe—Alaska, Europe, the Mediterranean ports and the Orient. The week before, 135,000 boxes were shipped to the same ports. Three large boats carrying seed potatoes from New Brunswick, all left at the same time for Buenos Aires with more than 225,000 crates of 110 pounds each crate. More than 700 men worked day and night to get the boats loaded quickly and all three vessels left under forced draft and expect to reach their destination in 20 days. One hour after they left port, one of the boats ran aground and had to be unloaded and as it would be too late for planting to charter another vessel, this large cargo of seed had to be left behind.

A new apple vender costing \$6.85 is on the market. The machine holds 25 apples or oranges and takes up only 8 inches of counter space. The fruit is in plain sight, held in space by heavy wire. "Bagology", claims that a woman is a person who can rush through an 18 inch aisle in a store without brushing up against the piled up tinware, then drive home and knock the door off a 12 foot garage.

The highway men that are burning the weeds along the highway, should be more careful and not scorch so many trees and shrubs. Surely the highway department should replace the evergreen trees ruined on highway 77 at the little cemetery between Beresford and Worthing. Sec. Fitch, of the Iowa Vegetable Growers, says the Finlanders

that pay their debts to Uncle Sam, are also the potato growers around Duluth that grow seed that is free from most all disease and no virus, only an occasional plant of wilt or spindle tuber in a car load.

A young farmer in Ohio has invented an aluminum mask or mould that he puts on young pumpkins and so grows Jack-O-Lanterns on the vine, with all sorts of faces. Two carloads of McIntosh apples were just shipped to California from British Columbia. This is the first shipment of apples from Canada to California in seven years. California has a big crop of apples that are moving slowly because there is a bumper crop all over the nation, still some one shipped in Canadian apples.

November 20th. Now that Idaho potatoes are being shipped into Watertown, the center of the South Dakota potato belt, and from there distributed all through the part of the state where every grower has fine potatoes and lots of them, for sale, the growers have cause to complain of the relief officials with apparently not a brain cell working.

Some time ago I was in the vicinity of Madison with a truck load of onions, and all merchants said they had plenty of onions to give away and that most every one went out with a bag of free onions on their shoulder. Where is the local grower to sell his produce if relief officials ship in all Idaho produce?

SECRETARY'S CORNER

(Continued from page 139)

We shall be glad to continue to do so to all that help us in this, our time of need.

We are to have 25 yearling trees of Dr. Hansen's hardy apricots to distribute in the spring. These will be sent, as an extra premium to all that send in a new membership. The new member will receive one of the regular premiums, listed in the November magazine, while you will receive one of the apricot trees as compensation for your efforts in getting us a new member.

Organized for 100 per cent efficiency, bee colonies require that each of their members has a real practical, justification for existence. Thru-out the entire summer season, the great lumbering male bee lives a life of ease and comfort—he is nurtured by workers. With the coming of autumn, when the queen bee has been impregnated, and when new supplies of honey are no longer available, the thrifty commune slaughters every drone in the hive. Between September and the following May, there is no male element in any of the colonies. —Gib Swanson in Capper's Farmer.



INDEX TO VOLUME X, 1937.

Akin to the Dinosaurs—F. Thone	11	Plant Breeding—F. L. Skinner	80
Appreciating the Lily—M. G. Kains	130	Plant Hormones—Dr. P. W. Zimmerman	53
A Text Winter—A. L. Truax	77	Plant Spacing—J. S. Robertson	28
Beautifying Home Grounds—Mrs. A. H. Christiansen	113	Pratt, A. N.—Spray Residue	118
Beekeepers' Notes—J. A. Munro	9, 21, 31, 57, 79, 103	Premium List	131
Benike, C. F.—Developing My Orchard	106	President's Corner—F. X. Wallner	6, 17, 29, 40, 52, 64, 76, 88, 100, 112, 125, 136
Berrigan, Dorothy—Utilizing Rhubarb	68	Red-tailed Hawk—O. A. Stevens	98
Big Sierra Mountain Tree	84	Robertson, J. S.—A Test Winter	56
Bird Banding—O. A. Stevens	134	Robertson, J. S.—New Tomatoes	16
Bird Habits—F. W. George	84, 94	Robertson, J. S.—Plant Spacing	28
Bird Neighbors—Dr. J. F. Brenckle	70	Robertson Memorial—W. A. Simmons	119
Bober, Sam H.—Nature and Human Nature	67	Robertson Obituary	101
Bobolink, The—O. A. Stevens	50	Rockwell, F. I.—Care of Old Groves	128
Book Reviews—Mrs. F. Briley	81, 92, 104, 142	Rough-legged Hawk—O. A. Stevens	110
Brenckle, Dr. J. F.—Bird Neighbors	70	Scott, D. H.—Lilacs	65
Briley, Mrs. F.—Book Reviews	81, 92, 104, 142	Secretary's Corner—W. A. Simmons	8, 20, 32, 44, 54, 66, 78, 91, 102, 114, 127, 139
Campfield, W. S.—Naming the Bing Cherry	95	Shrikes, The—O. A. Stevens	74
Canada Jay, The—O. A. Stevens	2	Simmons, W. A.—Robertson Memorial	119
Care of Old Groves—F. I. Rockwell	128	Simmons, W. A.—Secretary's Corner	8, 20, 32, 44, 54, 66, 78, 91, 102, 114, 127, 139
Christiansen, Mrs. A. H.—Beautifying Home Grounds	113	Skinner, F. L.—Plant Breeding	80
Davis, Prof. L. L.—Orchard Management	42	Soil for Tree Growth—W. H. Paul	71
Developing My Orchard—C. F. Benike	106	Some Hort. Experiences—H. L. Hopkins	105, 116
Dickcissel, The—O. A. Stevens	62	Spray Residue—A. N. Pratt	118
Egg Plant Fritters—M. M. Wallner	83	State Tree Planting—J. L. Low	19
Engle, Lorraine—Honey Cookery	118	Stevens, O. A.—Bird Banding	134
English Gardening—M. T. Fossum	93	Stevens, O. A.—The Bobolink	50
Evergreens from Seed—J. H. Gerbracht	46	Stevens, O. A.—The Canada Jay	2
Fall Care of Bees—J. A. Munro	115	Stevens, O. A.—The Dickcissel	62
Forest Conditions—W. H. Paul	55	Stevens, O. A.—The Kingfisher	38
Fossum, M. T.—English Gardening	93	Stevens, O. A.—The Mourning Dove	26
From Our Mailbag—Victor Lundeen	7, 18, 41	Stevens, O. A.—The Passenger Pigeon	14
Fruit Observations—W. R. Leslie	58, 69	Stevens, O. A.—The Red-headed Woodpecker	86
Gambles of a Gardener—Mrs. G. M. Jorgensen	33	Stevens, O. A.—The Red-tailed Hawk	98
Gates, E. A.—New Fruit Hardiness	30	Stevens, O. A.—The Rough-legged Hawk	110
George, F. W.—Bird Habits	84, 94	Stevens, O. A.—The Shrikes	74
Gerbracht, J. H.—Evergreens from Seed	46	Stevens, O. A.—The Wild Turkey	122
Graves, H. A.—Newsletters	96, 107, 119, 129	Test Winter, A—J. S. Robertson	56
Graves, H. A.—Our Cover Page	81	Test Winter, A—A. L. Truax	77
Herbs-Yarbs—Mrs. R. L. Keating	89	Thone, Frank—Akin to the Dinosaurs	11
Honey Cookery—Lorraine Engle	118	Tiny Beginnings of Giant Trees	83
Hopkins, H. L.—Indian Lore	140	Truax, A. L.—A Test Winter	77
Hopkins, H. L.—Some Hort. Experiences	105, 116	Uses of Plants by Indians—Dr. G. F. Will	4
Howe, G. H.—New Apple Varieties	45	Utilizing Rhubarb—Dorothy Berrigan	68
Indian Lore H. L. Hopkins	140	Wallner, F. X.—President's Corner	6, 17, 29, 40, 52, 64, 76, 88, 100, 112, 125, 136
Insect Enemies—J. L. Low	137	Wallner, M. M.—Egg Plant Fritters	83
Jorgensen, Mrs. G. M.—Gambles of a Gardener	33	Wanakena Garden Club—Mrs. E. Moon	126
Kains, M. G.—Appreciating the Lily	130	Wild Turkey, The—O. A. Stevens	122
Keating, Mrs. R. L.—Herbs-Yarbs	89	Will, Dr. G. F.—Use of Plants by Indians	4
Kingfisher, The—O. A. Stevens	38	Woodpecker, The Red-headed—O. A. Stevens	86
Leslie, W. R.—Fruit Observations	59, 69	Yeager, Dr. A. F.—N. D. News Letter	3, 15, 27, 39, 51, 63, 75, 87, 99, 111, 123, 135
Lilacs—D. H. Scott	65	Zimmerman, Dr. P. W.—Plant Hormones	53
Low, J. L.—Insect Enemies	137		
Low, J. L.—State Tree Planting	19		
Lundeen, Victor—From Our Mailbag	7, 18, 41		
Moon, Mrs. E.—Wanakena Garden Club	126		
Mourning Dove, The—O. A. Stevens	26		
Munro, J. A.—Beekeeper's Notes	9, 21, 31, 57, 79, 103		
Munro, J. A.—Fall Care of Bees	115		
Naming the Bing Cherry—W. S. Campfield	95		
Nature and Human Nature—Sam H. Bober	67		
New Apple Varieties—G. H. Howe	45		
New Fruits Hardiness—E. A. Gates	30		
New Tomatoes—J. S. Robertson	16		
Newsletters—H. A. Graves	96, 107, 119, 129		
N. D. News Letter—Dr. A. F. Yeager	3, 15, 27, 39, 51, 63, 75, 87, 99, 111, 123, 135		
N. D. Premium List—Dr. A. F. Yeager	3		
Orchard Management—Prof. L. L. Davis	42		
Our Cover Page—H. A. Graves	81		
Passenger Pigeon, The—O. A. Stevens	14		
Paul, W. H.—Forest Conditions	55		
Paul, W. H.—Soil for Tree Growth	71		

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