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A Patch of Green

Official Publication of the
Michigan & Border Cities Golf Course Superintendents Association

GRASS

Grass Is the Forgiveness of Nature - Her Constant Benediction. Fields trampled with battle, saturated with blood, torn with the ruts of cannon, grow green again with grass, and carnage is forgotten. Streets abandoned by traffic become grass-grown like rural lanes, and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal . . . Beleguered by the sullen hosts of winter, it withdraws into the impregnable fortress of its subterrean vitality, and emerges upon the first solicitation of Spring. Sown by the winds, by wandering birds, propagated by the subtle horticulture of the elements, which are its ministers and servants, it softens the rude outline of the world . . . Its tenacious fibers hold the earth in place and prevent soluble components from washing into the wasting sea. It invades the solitude of deserts, climbs the inaccessible slopes and forbidding pinnacles of mountains, modifies climates and determines the history, character, and destiny of nations . . . unobtrusive and patient, it has immortal vigor and aggression. Banished from the thoroughfare and the field, it abides its time to return, and when vigilance is relaxed, or the dynasty has perished, it silently resumes the throne from which it has been expelled, but which it never abdicates . . . It bears no blazonry or bloom to charm the senses with fragrance or splendor, but its homely hue is more enchanting than the lily or the rose. It yields no fruit in earth or air, and yet should its harvest fail for a single year, famine would depopulate the world.

— *John James Ingalls*

From 'The Golf Superintendent'

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"A Patch of Green"

31823 Utica Road, Fraser, Michigan 48026
(313) 293-3540

Published monthly by the Michigan and
Border Cities Golf Course Superintendents
Association

Circulation: 600

Ted Woehrle, Oakland Hills CC
Editor

Blakeman Publications
Graphic Arts/Circulation

ADVERTISING RATES

Double Page Spread.....	\$100.00
Back Outside Page.....	65.00
Full Page.....	55.00
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LOCAL NEWS

June meeting at Plum Hollow. There were 40 entries in the golf tournament, with four of the hotshots shooting in the 70's. Gene Johanningsmeier won the booby prize by shooting the highest score. His prize was a paper sack filled with *Poa annua* seed.

Jim Latham of the Milwaukee Sewerage Commission was our guest speaker, compliments of Terminal Sales. He mentioned that misery likes company so he embarked on a slide presentation showing problems in other areas. These slides are always welcome and educational. We always learn a great deal from someone else's problems. Some of the points that came up in the discussion period included: always roll a newly seeded area for better results; air pollution in Ohio is very critical, especially with copper; don't limit carts to the roughs unless you want roads to develop. It seems that the golfers will ride right on the edge of the fairway if he is restricted to the rough. Ralph Guyer, of Missouri, uses a flag system to designate when carts can be used or when they are restricted. As a member drives in the Club entrance he will notice a green or red flag flying. If the flag is green he knows that the carts are being used. If there is a red flag flying he shouldn't ask because the carts are not available.

The late June meeting, at Holly Greens, was held on another beautiful

day. Our guest speaker, Dick Christianson, of Applied Biochemists, Inc., spoke to us on controlling Algae in our lakes and ponds. Dick stated that we should wait until the water temperatures are at least 60 degrees. If the temperatures are lower than that we will be disappointed with the results. Their product, called CUTRINE, contains three pounds anhydrous copper sulfate per gallon. The killing of the algae is related to the rate of photosynthesis. Oxygen depletion could cause fish kill. *Treat only half the pond at a time if it is completely covered with algae.* If the product is used properly it will not be harmful to turf that is irrigated with the water from a treated pond.

LETTER OF APOLOGY

Because of the busy schedule resulting from the extreme drought in our part of Michigan, coupled with the high temperatures, your editor has found it difficult to find time to compile articles for the July issue of the "Patch of Green." There certainly has been enough to write about but it was difficult to find time to sit down and concentrate when the grass was suffering. Let's hope that the remainder of the summer is a little kinder to us and we can find a little time to relax.



Algae: The Spoiler

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DROUGHT CONTINUES

The lower half of the lower peninsula is still in the grips of one of the driest and hottest summers in Michigan's history. The drought has prompted the government to declare three counties as disaster areas. This will enable them to receive federal assistance.

There is an acute water shortage in many areas. Some of the clubs are reporting salt concentrations have reached such proportions that the water is detrimental to the turf. Already weakened turf is succumbing to the additional stress caused by the polluted water. There really isn't much that can be done at this time except hope and pray that we get some much needed rain to help dilute some of these concentrations in our ponds and streams.

What else can we do during this drought that might help to save some of our turf? In unwatered areas we can cut down on the frequency of mowing. Avoid using weed killers. They would not work any way plus you are risking a complete kill of your desirable grasses. Limit your vehicular traffic before you wear the grass off down to the ground. Avoid fertilizing these dry areas in case you get a light rain that isn't heavy enough to dissolve and wash in the fertilizer. A light rain may just cause a heavy concentration of salts which would be harmful to the turf.

Make sure that you water your newly planted trees at least once a week and twice if you find the time. It wouldn't hurt to go out and water the trees that you planted last year too. It sometimes takes two or three years of watering young trees to save them during one of these droughts.

Keep up with your fungicide program and don't feed that grass any more than is absolutely necessary or you might find yourself in trouble with some lush grass that you didn't bargain for.

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LAWN EQUIPMENT PLAYS CUPID

Lawn equipment teamed up with the Detroit Free Press' 'Action Line' to play cupid for a couple who met in Zurich, Switzerland. It seems as though the young lady, who lives in Ann Arbor, wanted to send her boyfriend, now in Boston, a birthday gift. The gift she wanted to send was a park bench - a replica of the bench they sat on when they met in Zurich.

Action Line forwarded the young lady's problem to Lawn Equipment, who not only donated a bench, but also included a gold plate inscribed, "To Bill with fondest memories of our night in Zurich, love, Judy." In this day and age, too many businesses don't take an interest in people and their "trivial" problems. It's easy to dismiss any such problems and aid as "against company policy".

To many companies, a park bench would be a "trivial" problem, but not to Lawn Equipment.

A sign planted outside an Osaka, Japan used car lot explains its secret of success:

We pay positively highest
prices for cars we buy.
We sell for absolutely lowest prices.
How we stay in business?
We lucky!

GCSAA

President Emeritus, Norman W. Kramer Passes Away



Norman W. Kramer, who has been golf course Superintendent of the prestigious Point O'Woods Golf and Country Club in Benton Harbor, since 1959, died suddenly June 3 of a heart attack at the age of 44.

Mr. Kramer had just completed a one-year tenure as president of the Golf Course Superintendents Association of America.

During the past 13 years, Mr. Kramer shaped Point O'Woods into peak championship condition for the 1963 and 1965 Western Golf Association Amateur Championship tournaments. He was in the midst of preparing for the 1971 Western Amateur, which is being held on July 28 through August 1.

In addition to these events, Mr. Kramer has prepared the course for numerous local and regional competitions during his tenure. Prior to that time he was Superintendent of Silver Lake Golf Course in Orland Park, Illinois. His most important assignment there was the preparation of the course for the 1958 USGA Public Links Golf Tournament.

Mr. Kramer has been active as a member and leader in many local and regional turf and superintendents' organizations. When he left Illinois for the Point O'Woods assignment in 1959, he was vice president of the

Midwest Association of Golf Course Superintendents. Since his move to Michigan, he has served as director, vice president and president of the Western Michigan GCSA and the Michigan GCSA. He is past president of the Midwest Regional Turf Foundation at Purdue University. He was serving as a director of the Michigan Turfgrass Foundation.

Kramer has been a Class A member of the national association since 1951. He made several appearances on the Association's annual conference educational program as speaker. He became a member of the GCSAA Executive Committee in 1966 and was elected vice president in 1969. He was elected president of the GCSAA at the group's annual meeting in Houston, Texas, on February 11, 1970, and served in that capacity until February, 1971, when he was appointed president emeritus.

Also active in numerous community activities, Mr. Kramer served on the St. Matthews Lutheran School Board in Benton Harbor for four years (two of them as board chairman).

Survivors include his wife, Peggy, and two teenage daughters, Lauri and Lynn, who reside in Benton Harbor.

We who knew Norm for so many years will certainly miss his leadership and friendship.

QUESTION OF CHEMICAL POLLUTION CLOSING IN

Almost everyday we read in our local newspaper about another frantic effort by some "do gooder" to stop the careless use of some chemical before the entire earth is devoid of its population. At first we heard how our air has been polluted, then it was our streams, and now it is our soils.

In a recent article, we were told how the people who use fertilizers on their grass are polluting the streams. One writer notes that much of the phosphate problem stems from lawn fertilizers. A few days later, we read in the same paper another article written by another person on how Lawn grasses reduce water pollution. They actually reduce rather than add to water pollution! The article says some home owners are afraid to fertilize their lawns for

fear of contributing to the eutrophication problem.

If you recall, the paper presented at Michigan State last winter we were told how stable the phosphates are in the soil. There have been a few traces of Nitrates found in drainage water, but seldom are phosphates found. This article pointed out that most of the phosphorous responsible for eutrophication comes not from fertilizer, but from waste treatment plants. Waste water contains considerable detergent, and most of these detergents contain high concentrations of phosphorous.

These thoughts should make you feel a little bit better. Now, what about the Mercury problem? Some people are urging that any person using more than one pound of Mercury per year should be licensed. The state is attempting to control mercury contamination of our lakes and streams. Why is it then that we find no traces of Mercury in our drainage ditches leaving our golf course when we use over 100 pounds of mercury per year? Maybe it is because of another article where some writer has stated that 95% of mercury contamination is caused by the fallout of mercury from the smoke coming from various industries. There is some raw mercury dropped into streams by industry, but this is usually harmless and settles immediately to the bottom. Some officials feel that millions of tons of mercury per year are being discharged into the atmosphere by municipal incinerators and fossil-fuel power plants.

The funny part of this whole mercury scare is that no one really knows what the human's tolerance is to mercury. When are we exposed to too much mercury? No one really knows.

As Dr. Fred Grau in *Golfdom/1970*,
Continued on next page

MODERN RESEARCH

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Charter Member of the Michigan and Border Cities Golf Course Superintendents Association passes on to Greener Pastures.

Leo N. Wedyke, long-time Superintendent for Glen Oaks Golf Club, died recently, shortly after leaving the course on his way home. He worked at Glen Oaks for some 42 years.

Leo, 75, began working at the Club in 1929 after serving seven years as assistant Superintendent at Detroit Golf Club.

Chemical Pollution Cont.

September, "Living turf is a significant factor in improving the environment. It has roots in the soil, it absorbs rainfall, oxygen is released, carbon dioxide is absorbed, respiration cools the atmosphere, players feel the resilience underfoot and the natural green color is a delight to the eye." Now don't you personally feel that these things are worth more to the total picture if we can protect it from dying with a few applications of pesticides?

The DDT picture is becoming more and more confused. From the September, 1970 issue of the "Bull Sheet" in an article entitled "Ravaged Summer" we quote from a portion concerning DDT:

"Despite loud claims to the contrary, USDA flatly makes the following points. There have been instances in which DDT in lakes and streams has contributed to fish mortality; however, "we know of no reports of any endangerment of any species of fish as a result of the use of DDT." The same holds true of birds whose numbers (according to the Audubon Society's own count, and including the supposedly endangered robin) are constantly increasing. As to the alleged threat to mankind, USDA quoted a recent AMA finding that "the claim that DDT has a carcinogenic effect upon humans constitutes an unproved speculation.

"no increase in the levels of DDT in

human beings during the past decade," while "comprehensive studies of workers in DDT factories show no impairment of health attributable to occupational exposure to DDT."

Similar views have been expressed by the World Health Organization, which last summer stated "DDT has been the main agent in eradicating malaria in countries whose populations total 550 million people, of having saved about five million lives and prevented 100 million illnesses in the first eight years of its use, of having recently reduced the annual malaria death-rate in India from 750,000 down to 1,500, and of having served at least two billion people in the world without causing the loss of a single life by poisoning from DDT alone."... "It is so safe that no symptoms have been observed among the spraymen or among the inhabitants of the spray areas, which numbered respectively 130,000 and 535 million at the peak of the campaign."

The perils of the substance are thus largely illusory; however the dangers of a ban, even limited in scope, are frighteningly real. In California and Arizona, beekeepers complain that toxic substitutes for DDT are wiping out their hives. Maine gave up DDT years ago; in 1967, when the spruce bud worm threatened to destroy its forests, the state hastily changed its mind (At the urging of the Swedish Board of Private Forestry, The National Poisons and Pesticides Board

Continued on page 14

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CERTIFICATION PROGRAM

The National headquarters announced recently that the long-awaited Certification program will become a reality in August. Members have been sent cards to indicate interest in the program. If you haven't sent your card in, please do so immediately.

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like insects

*BAYGON 70% Wettable Powder is now registered as an insecticide for application to lawns and turf. Economical, easy-to-mix sprays of BAYGON 70% Wettable Powder are noted for their long residual activity.

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like nematodes

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like major turf diseases

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like cottony blight

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MAC'S 70th BIRTHDAY PARTY

Leroy A. (MAC) McElheny, Superintendent of Birmingham Country Club, celebrated his 70th birthday at a party given in his honor down at his maintenance shop at the Club. Some of his close friends arranged the party and over twenty fellow Superintendents

and associates came over to help celebrate. A big cake and several gifts were presented to the surprised Mac. I still don't believe that Mac is 70. I think he is including an extra ten years because he is a golf course Superintendent. Happy Birthday Mac!

SPODNIK HEADS GCSAA NOMINATING COMMITTEE

President Richard C. Blake has appointed Past President John Spodnik chairman of the 1972 Nominating Committee, with the approval of the Executive Committee. Other members of the Committee are: Roy Nelson, Illinois; Jim McPhilomy, Colorado; Mel Lucas, Jr., New York; and Al Glaze, Central California.

The committee will follow the procedure of the last two years and convene for a meeting on a date mutually convenient to all in the vicinity of Headquarters for a final review of names submitted for the nominated slate for 1972.

Voting members are reminded of the importance of submitting names of candidates for the offices of their Association as well as exercising their privilege of voting

DUTCH ELM CURE?

A year or so ago, Michigan State University imported from France a wasp called the Dendrosoter which lives on the larvae of the Bark Beetle with the hopes of establishing a natural enemy against the beetle and thereby controlling the disease without the use of chemicals. For some unknown reason, the wasp has not been doing its job. Thousands of the wasps were released with no apparent change in the control of the elm disease. Maybe it is just a matter of time. Let's hope so.



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FLASH FROM JACKSON CC

On June 29th around 2 p.m.; we at the Country Club had a very unfortunate experience. A careless smoker dropped a lighted match or cigarette in the rough. With conditions such as they are this year; combustion was instantaneous. Only through the immediate action of the Fire Fighting Squad of the Greens Department was disaster averted.

This fire squad with their Cushman Pumper was on the scene in minutes.

The highly trained skill of this squad, allowed them to access the holycoast, start immediate action; contain and arrest it only in a matter of minutes. Thereby allowing the smoke to clear and play to continue. Fortunately, only one quarter of an acre was lost.

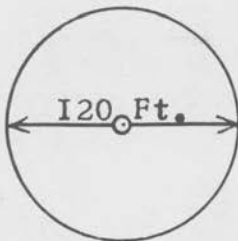
Remember what "Smokie the Back Swinger" says! *The rough you save may be your own.*

Bill Madigan

Sprinkler Precipitation Formula

Reprinted from the May issue of "BULL SHEET"

Formula for finding the precipitation in inches per hour from any sprinkler when the discharge in gallons per minute and the diameter of coverage in feet is known.



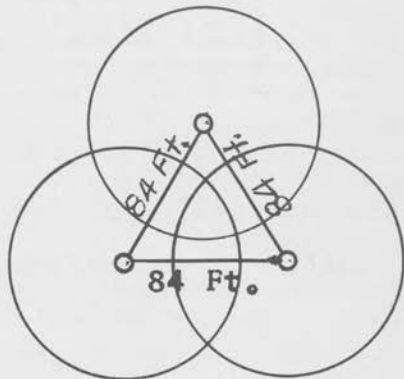
Precipitation in inches per hour =

$$\frac{122 \times \text{G.P.M.}}{\text{Diameter in feet squared}}$$

EXAMPLE: Where a sprinkler discharges 25 gallons per minute and covers a circular area of 120 ft. in diameter the precipitation in inches per hour is:

$$\frac{122 \times 25}{120 \times 120} = 0.21 \text{ inches per hour.}$$

Formula for finding the precipitation in inches per hour from identical sprinklers located in an equalateral spacing when the discharge from any one of the sprinklers and the spacing between the sprinklers in feet is known.



The precipitation in inches per hour within the triangle is:

$$\frac{111 \times \text{G.P.M.}}{\text{Spacing in feet squared}}$$

EXAMPLE: If each of the above sprinklers discharges 25 g.p.m. and they are spaced 84 ft. apart in an equalateral position the precipitation in inches per hour within the triangle is:

$$\frac{111 \times 25}{84 \times 84} = 0.39 \text{ inches per hour.}$$

C. E. (Scotty) Stewart

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NAME OF INTERESTED PERSON _____

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Or you may contact the next golf course supplier that calls on
you and give him the information needed for application.

NOBODY GIVES A DAMN

Stop blaming the other guy. This doesn't mean we should be willing to accept low standards. Just don't expect more from others than you expect from yourself.

Let's encourage responsibility where we find it, praise the efforts and good work of others, show them that they are appreciated. On the other hand, when you are hit by a

foul-up, really raise hell. Don't hesitate to carry your beef all the way to the top. If this fails, take your business away. It's better to do without than to live with second-rate products or services. It's a fact that people who run businesses today are more concerned about consumer complaints than ever before. You may find that hard to believe, but it's true.

Above all, let's cut out the rotten excuse that we are "only human", that we're entitled to some daily quota of error or indifference. Only human? What an incredible denial of the human potential. Only human? This is the ultimate insult.

Remember that man's greatness does not lie in perfection but in striving for it. Once we don't give a damn, we have lost everything.

FLASH!

FALL GOLF DAY

September 17, 1971

BAY POINTE GOLF CLUB

- Details to Follow -

FIRE HITS LAWN EQUIPMENT

A flash fire destroyed much of Lawn Equipment's main building a few weeks ago. With the hard work that they are so famous for, they were able to continue business without most of us even knowing they had a

fire. Much of the service area and office space was destroyed. Gordie Lafontaine said that the place is practically put back together and that they will be 100 percent in just a few more days.



PROBLEMS

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Chemical Pollution Cont.

has granted forestry a one-year exemption from the general ban. Without DDT, officials feared, the large pine weevil would cause \$20 million worth of damage to trees and seedlings.) The alarming spread of the gypsy moth — which Harold Porter, president of the National Plant Board (an organization of state plant pest-control officials) blames squarely on the lack of DDT — lately has made headlines, not only in New York State but also in New Jersey, where the number of defoliated acres is mounting geometrically from 5,000 in 1968 to well over 100,000 this year, Pennsylvania and Virginia. All told, according to the Department of Agriculture, the gypsy moth in 1969 defoliated 260,000 acres of woodland, triple the number destroyed in 1968. This year's toll will be far worse.

Here, in official but graphic terms, is what's involved: "In their caterpillar form, gypsy moths strip the leaves from forest, shade and fruit trees, as well as ornamental shrubs. By defoliating forests, they increase fire and erosion hazards, adversely affect stream flow, reduce land and recreational values, and destroy wildlife habitats. Plant protection officials point out that a single defoliation has been known to kill white pines, spruce and hemlock. Two defoliations can kill most hardwoods."

What the Environmentalists are seeking would be a major disaster, both at home and abroad. To deny the product to such nations as India would constitute, in the words of one scientist, "an act of genocide." To ban DDT in this country as too dangerous, while permitting its export, would be a flagrant piece of hypocrisy, which could only trigger global ill-will. The physical dangers, finally, are frightening to behold. Thus, the World Health Organization points out that in Ceylon, which discontinued the spraying of DDT

Continued on page 17

MEET THE BOARD

This is the sixth in a series highlighting the backgrounds of our Board members. We are featuring Andrew A. Bertoni, Superintendent of Holly Greens Golf Course of Holly, Mich.



Andy began his career at Barton Hills in 1946. In 1952 he moved to the Meadowbrook Country Club. While Superintendent at Meadowbrook, the Club hosted four big tournaments, including the PGA in 1955.

After spending several years doing his post graduate work at the University of Michigan and Notre Dame University, Andy decided to take up the profession of Turf Management. We are all happy that he decided to join our ranks. His ready wit and laughter are always welcome.

His leadership ability and his

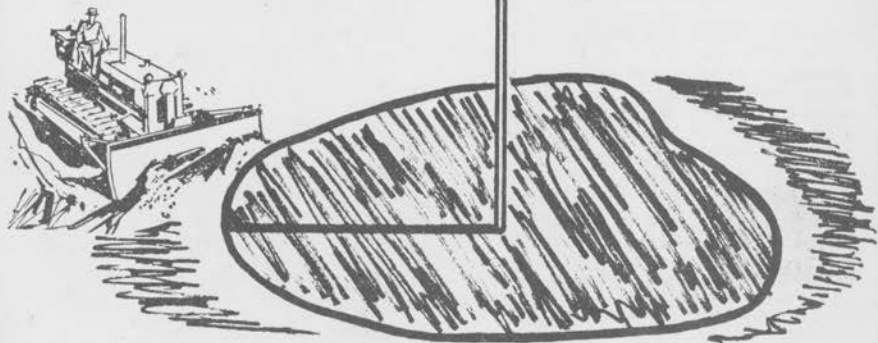
businesslike attitude has helped him obtain all the chairs of the Local association, as well as spending three terms as Director of the Golf Course Superintendents Association of America. Andy is also a member of the USGA Green Section Committee.

Some of his hobbies include golf, and during his off season he's active in officiating basketball and football throughout the state of Michigan. He also takes pride in training young students in the art of greenskeeping.

He resides in Northville with his wife, Evelyn. His son, Jim, has recently left our area to take over the position of Superintendent of the Knowlwood Country Club in the Chicago area, after spending a season under the guidance of Butch Bemadini, long time Superintendent at Knowlwood.

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IN BALANCE WITH NATURE

By John Carew, Chairman, Horticulture Department, MSU

In the beginning - there was Earth, beautiful and wild, and then man came to dwell. At first, he lived like other animals feeding himself on creatures and plants around him.

And this was called IN BALANCE WITH NATURE.

Soon man multiplied. He grew tired of ceaseless hunting for food; he built homes and villages. Wild plants and animals were domesticated.

Some men became Farmers so that others might become Industrialists, Artists or Doctors. And this was called Society. Man and Society progressed.

With his God-given ingenuity, man learned to feed, clothe, protect and transport himself more efficiently so he might enjoy Life.

He built cars, houses on top of each other, and nylon. And life was more enjoyable. The men called Farmers became efficient.

A single Farmer grew food for 41 Industrialists, Artists and Doctors. And Writers, Engineers and Teachers as well.

To protect his crops and animals, the Farmer produced substances to repel or destroy insects, diseases and weeds. These were called Pesticides. Similar substances were made by Doctors to protect humans. These were called Medicine.

The Age of Science had arrived and with it came better diet and longer, happier lives for more members of Society.

Soon it came to pass that certain well-fed members of Society disapproved of the Farmer using Science. They spoke harshly of his techniques for feeding, protecting, and preserving plants and animals. They deplored his upsetting the Balance of Nature. They longed for the Good Old Days.

And this had bad emotional appeal to the rest of Society. By this time Farmers had become so efficient, Society gave them a new title: Unimportant Minority.

Because Society could not ever imagine a shortage of food; laws were passed abolishing Pesticides, Fertilizers and Food Preservatives.

Insects, disease and weeds flourished. Crops and animals died. Food became scarce. To survive Industrialists, Artists and Doctors were forced to grow their own food. They were not very efficient.

People and governments fought wars to gain more agricultural land. Millions of people were exterminated. The remaining few lived like animals, feeding themselves on creatures and plants around them.

And this was called IN BALANCE WITH NATURE.

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and development information with you. With this information, perhaps we can work together toward meeting your turf grass objectives.

Charles Croley

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Chemical Pollution Cont.

several years ago, "more than a million cases of malaria have reappeared." In this country, which thought it had wiped out the disease long ago, 1,559 cases were reported in the first 24 weeks of 1970, up 25% from 1969. As to food and fiber, a Special Review Group, comprising four noted entomologists, after a thoroughgoing scrutiny of current practices, concluded last month that DDT remains essential for most domestic crops; perhaps as a wry postscript, it added that there is no satisfactory substitute for DDT in the control of rattlesnakes in the Southwest U.S. "If we had to depend on nature," an eloquent lawmaker once said, "we would probably die of disease at a fairly early age, if we did not starve first."

* * *

By their fruits ye shall know them. Through their unbridled recklessness with facts and sheer irrationality—a triumph of superstition over science, one scholarly critic has averred—so-called conservationists and ecologists have poisoned the climate of opinion. Now willy-nilly they are threatening to unleash famine and pestilence upon their fellow citizens. ("It's a question of survival," cried the resident of Shirley, "the caterpillars or us.") They profess to preserve wildlife, defend the environment, befriend the earth. Their natural prey is civilized man."

A group of 25 senior engineering students at Arizona State University have just completed a state-wide survey on air pollution. As part of the study the students asked local residents for their opinions on the problem. The most notable response came from a little old lady who was asked what causes air pollution. She replied, "All those filthy movies, spitting on the streets, and those unkempt and dirty people - they're the worse of all."

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CANKERWORMS

The spring and fall cankerworms are native pests of deciduous forest, shade and orchard trees. They periodically cause serious defoliation in the northeast and range over most of the United States and southern Canada.

Damage

The caterpillars of both species appear on trees in early spring. They destroy the young leaves and buds of a wide range of common deciduous trees, but prefer elm and apple. Cankerworms are also abundant on oak in southeastern New York and Long Island. By the time the larvae finish feeding only the major veins and midribs of the older leaves are left. Trees may be completely defoliated. If this happens two or three years in succession, trees may die or be seriously weakened. In the case of lems in areas where Dutch elm disease is present, this is an important leaf-feeding pest to control.

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Spring Cankerworm

The caterpillar has a dirty-white head, mottled with brown, instead of a green to black head as in the fall cankerworm. It also has five pairs of legs instead of six pairs. When full grown the caterpillars are three-quarters to one inch in length.

The moths appear in April and May and lay small irregular clusters of eggs on the bark, about fifty or more to a cluster. Hatching and feeding is about the same as the fall cankerworm, but when the caterpillars enter the soil to pupate, they only make an earthen cell.

Fall Cankerworm

The full grown caterpillar is about an inch long and varies in color from green to brown or black, with pale lines running the length of the body and possibly a dark stripe on the back. Six pairs of legs are present, though one pair is quite small.

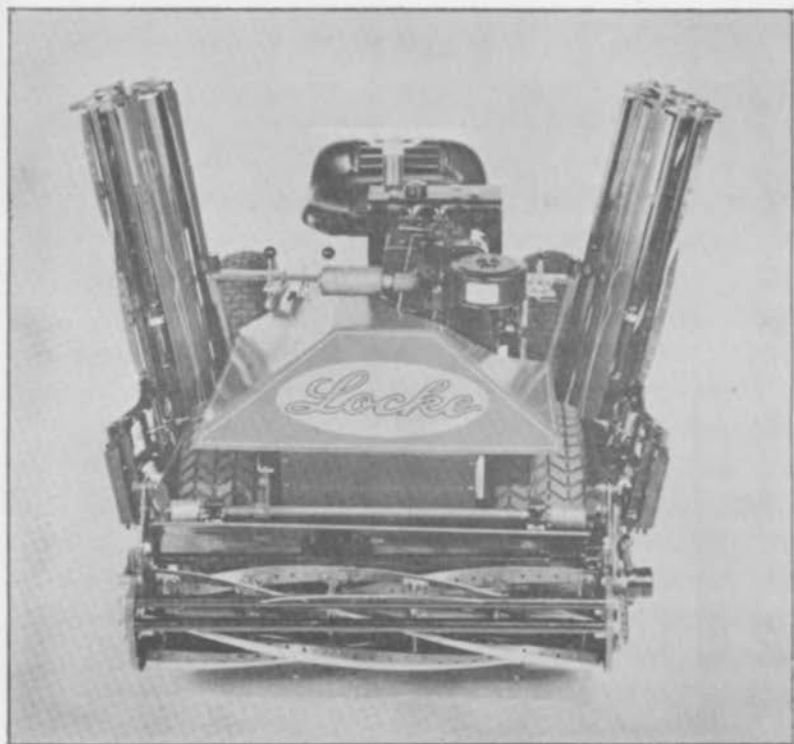
The moths emerge from the soil in November and December. The grayish-brown eggs are laid on the bark of twigs and limbs in close ranked flat masses of one hundred or more. They hatch in April and early May as the buds open and the caterpillars feed for four or five weeks. When fully grown they enter the soil where they make tough silken cocoons near the surface. They pupate in early June, but moths do not emerge to lay eggs until November.

Control

These pests are ordinarily kept at low population levels by natural factors. When control is warranted, insecticides such as Sevin effectively kill the larvae and protect the trees from defoliation. The control for both species by insecticides is the same and comparatively simple if the material is applied in late April or early May.

Sevin may be used at the rate of two gallons of 50 percent wettable powder per 100 gallons of water or 6 tablespoons per three gallons of water.

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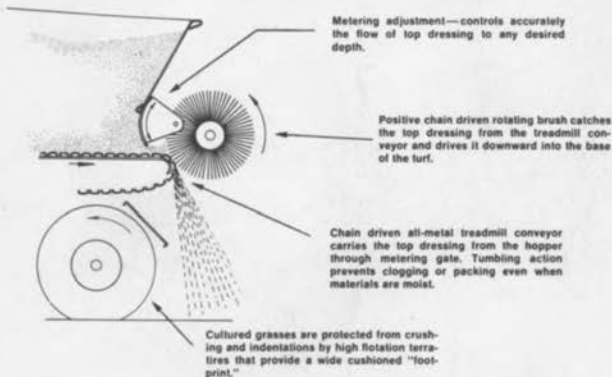
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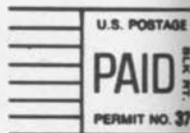
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