top condition or b) accepting lower quality in the course's condition.

Whether the impending law will in fact drastically curtail pesticide use on golf courses is currently unknown. Called the Federal Environmental Pesticide Control Act, it will establish administrative procedures for the newly-created Environmental Protection Agency to regulate pesticides as "general use" or "restricted"—i.e., to be applied only by a "certified pesticide applicator." Most experts seem relatively unconcerned about the impending law's effects. They believe that it will cause golf course superintendents only mild inconvenience, that there are alternative means or ready substitutes for any chemicals that might be banned. Dr. Paul Alexander, director of education for the Golf Course Superintendents Assn. of America, however, takes a starkly pessimistic view:

"This new Federal law could deal a severe setback to the quality of golf courses. It could set them back to the standards of the late 1920s and 1930s. United States golf courses could again be overrun with crabgrass, dandelions, pigweed, ragweed, brown patch, dollar spot, Pythium, Japanese beetles and cinch bugs. Anthills could appear again on greens. What golfer today can remember seeing anthills?"

Enactment of the new Federal controls is practically certain. By a 3 to 1 margin, the House of Representatives has already enacted its version and the Senate is expected to follow sometime in early 1972.

**Battling nature**

To put the pesticide problem in perspective, let's take a broader look at the entire problem of golf course maintenance. As indicated earlier, the modern American golf course is a triumph of technology over nature. Bulldozers, graders and other earth-moving carve out the trees and shape the topography to the architect's plan. Hundreds of tons of sand are poured into trap excavations. Special breed grass seed is planted or pregrown turfgrass is unrolled for the greens. Fine-bladed bentgrass flourishes in the damp, cool English summers; London's parks look like practice putting greens. But keeping bentgrass alive in our torrid continental summers is a botanical feat comparable to such medical marvels as iron lungs and mechanical hearts.

Maintaining a well-conditioned American golf course is thus a perennial war against nature. Left to itself, nature creates an ecosystem brimming with diversity. A tropical jungle, with its abundant, interdependent species of plant and animal life, is ecologically stable. Cornfields, grass lawns, rose gardens and other "monocultures" are highly unstable. Growing and maintaining a putting green is the world's most difficult and exacting horticultural task, according to Dr. Alexander. The ecological stability of a putting green is comparable to a bowling ball balanced on a cue stick.

Pesticides, which include fungicides, herbicides and insecticides, are of course only one aspect of scientific golf course management. Underground watering systems keep fairways green and sparkling throughout the golf season. Proper watering is critical. Too little water,
too infrequently applied, allows
the grass to burn and wilt. Too much
water, frequently applied, pro-
duces shallow roots and tender leaves
susceptible to fungus disease. In tor-
rid climates, water can even act as a
coolant, applied as often as three
times a day. Water cooling can
temporarily reduce soil surface
temperature by as much as 40 de-
grees Fahrenheit. It prevents bent-
grass from wilting and suffering
permanent damage during pro-
longed hot weather.

Greenskeeping machinery has kept
pace with the new course main-
tenance technology. Ten-bladed fair-
way gang mowers, replacing the
conventional six-bladed mowers, en-
able a superintendent to eliminate
the slight rippling that results from
wider blade spacing. Mechanical
spikers puncture and loosen com-
pacted soil, allowing better root
penetration and better aeration. Pow-
er thatchers remove the dense ac-
cumulations of old grass blades and
new clippings that retain water and
obstruct the passage of water and
oxygen into the soil. Other equip-
ment includes sprayers, sod-cutters
and powered putting greens rollers-
mowers, capable of producing carpet
smoothness.

Also included in the golf course su-
perintendent’s arsenal are potent
new nitrogen-releasing fertilizers and
hybrid grasses—weed resistant
U-3 bermudagrass for hot climates
and fungus-resistant Penncross bent-
grass for cooler climates.

Despite the great progress in all
other phases of the golf superinten-
dents’ arts, pesticides are currently
Crabgrass, dandelions, chickweed, clover and Poa
annua.

The golf course superintendent
fights these pests with an arsenal that
includes some of the most potent
chemicals used on farmland—not-
ably mercury-based fungicides and
the notorious insecticide, DDT.

The pesticide controversy
The direct threat posed by unre-
stricted use of pesticides is far less
serious than the indirect threat. The
conservationists’ case against DDT,
as an example, concerns its long-
term effects rather than immediate
hazards. As one of the major poisons
developed during World War II by
the pesticide industry. DDT has been
sprayed extensively and in some
instances with reckless stupidity. Af-
ter the spraying of some one million
tons of this durable poison over the
past 25 years in the United States
alone, DDT has invaded the entire
food chain. Ocean algae contain sev-
eral parts per billion; small alga-
eating fish contain several parts per
million and fish-eating seabirds
contain many parts per million.
Americans are storing DDT in their
fat, in their livers and other organs.
The effects of this storage are un-
known, but ignorance is not to be con-
fused with bliss. Even if current
storage levels are harmless to human life,
DDT, nonetheless, presents a po-
tential threat. Its unrestricted use
threatens largely unknown, but po-
tentially hazardous changes in the
ecological balance. Some insects
have developed an immunity to
DDT, but their natural control
agents, predatory birds, have not.
Uncontrolled growth of these DDT-
immune insects could escalate the
chemical warfare with even graver
ecological consequences.

Against the conservationists’ argu-
ment for banning pesticides like DDT,
Dr. Alexander cites several counter
arguments for permitting their con-
tinued use on golf courses. First there
is the small scale of golf courses com-
pared with farmland, the biggest pes-
ticide consumer. More important,
however, according to Dr. Alexan-
der, is the nature of the land. Farm-
land readily leaches out pesticide
chemicals, which then run into
streams and waterways. But the soil
under good turfgrass is stabilized in-
to a tightly bound system of inter-
locking turf roots. Mercury-based
compounds are apparently retained
for years, moving only a few inches,
in the turfgrass soil. Golf course su-
perintendents take great care in ap-
plying pesticides, especially in cali-
brating application equipment to
 guard against harmful overdoses.
They seldom use aerial spraying,
which often releases pesticides out-
side the target areas. In the past some
large-scale DDT users have applied
DDT as indiscriminately as satura-
tion bombing. Golf course spraying is
highly controlled—done either by su-
perintendents skilled in the tech-
niques or by an expert contractor
called on for the purpose.

A recently-enacted New York State
law offers a preview of problems that
may soon confront golf course super-
intendents all over the United States
if the Federal Environmental Protec-
tion Agency rigorously exercises its
new powers to ban the more hazard-
ous pesticides for general use. New
York State’s law bans several of the
more potent pesticides—notably DDT
and the mercury-based fungicides
suspected of contaminating tuna and
swordfish with mercury deposits af-
ter they leach out of the soil and ulti-
mately flow to the oceans. Several
New York State superintendents re-
port no major problems resulting
from New York State’s law during
the law’s first golf season. Joseph
Baidy, superintendent of Rochester’s
Oak Hill CC, site of the 1968 Nation-
al Open, has successfully substituted
the newest, general-purpose fungi-
continued on page 57
And you know how good that is. You see more and more Harley-Davidson golf cars on America’s top courses. We build Utilicars with the same care, the same idea that only “perfect” will do. The same way we’ve been putting power on wheels for over 67 years. That’s why they’re such hard-working, long-lasting cars. So economical to own and operate. And why they’re so widely accepted for industrial uses. Choose from six body styles, cabs and other options to match your jobs. Choose gasoline power with simple, reliable automatic transmission plus instant ignition starting that ends wasteful idling. Get a demonstration today from your Harley-Davidson dealer. . . the place to go for fast, dependable service, too. And be sure to look closely at our brand new high strength industrial bumper (not shown). It’s tough. Or write: Manager, Commercial Car Division, AMF | HARLEY-DAVIDSON, 3700 West Juneau Avenue, Milwaukee, Wisconsin 53201.

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With any chemical, follow labeling instructions and warnings carefully.
CHEMICAL continued from page 52

The impending Federal Environmental Pesticide Control Act will ultimately require golf course superintendents to register as Certified Pesticide Applicators, unless they are content to use the pesticides available to homeowners. This certification must occur within four years of the bill's enactment, which is expected no later than spring, 1972. States can elect to license Certified Pesticide Applicators (CPAs). In states that don't exercise this prerogative, the Federal Environmental Protection Agency (EPA) will administer the licensing. Presumably, the EPA will require licensing applicants to pass an examination testing their knowledge and skill in applying pesticides whose improper use would endanger either the applicator or the environment. As Certified Pesticide Applicators, golf course superintendents may be required to keep records and file reports with state or Federal officials.

Under the expanded Federal authority provided in the new law, all commercially marketed pesticides will fall under EPA jurisdiction. When its new registration system goes into effect, presumably within the next year or two, EPA will regulate each pesticide in one of four ways: 1) Ban its use totally, by rejecting its registration application; 2) Register it as a "restricted-use" pesticide, i.e., a pesticide that may be applied only by a CPA; 3) Register it as a "general-use" pesticide, i.e., a pesticide approved for general public sale; or 4) Register it as both a restricted and a general-use pesticide, distinguishing its restricted from its general uses.

Expanded Federal regulation will naturally tend to make pesticide controls more uniform throughout the United States. The states will generally retain authority to impose stricter controls than the EPA's, but they cannot weaken any EPA controls.

Judged by EPA's current policy, DDT will probably be banned. Other pesticide candidates for a Federal ban are those containing lindane, mercury, arsenic, lead compounds, chlor dane, endrin, heptachlor, toxaphene and several others. If any of the foregoing are not banned, they will probably be restricted.
Tom takes a few practice swings on the first tee and conks Bill on the head; John slices a ball two fairways over hitting Alice in the face; Suzie dives into the swimming pool and hits her neck on the bottom; little Timmy gets into the superintendent’s chemicals; a bee stings Betty; George, in his spikes, slips in the locker room.

Most of the above accidents could have been prevented, but unfortunately, one or all occur annually at most golf clubs. Are you and your staff prepared to handle these kinds of emergencies with the proper training and equipment? Although a club official may be a stickler for safety, in too many instances he is not prepared should emergency equipment actually be needed. It’s rationalized that accidents happen at “other” clubs. So, the equipment on hand to deal with these unexpected accidents is usually a box of bandages or an inadequate first-aid kit.

It will probably cost the club anywhere from $500 to $900 to be adequately outfitted to handle emergencies which might arise around the golf course.

An accident on the golf course is the dread of every club. It may be a long time from when the alarm goes out until professional help arrives, but positive action by the manager, professional, superintendent and their staffs may spell the difference between life and death for an accident victim. The very definition of first aid is the immediate and temporary care given the victim of an accident or illness until the services of a doctor can take over.

This is not a “how to” first-aid guide. Rather, it is a fundamental listing of the type of equipment, and its uses, which are necessary for every golf club. Although most of the accidents that occur on a golf course are preventable, the club official can find little solace in knowing that it wasn’t the club’s fault the accident happened, if he wasn’t prepared to handle the emergency.

The initial step in the area of first aid a club should employ is in communications. Most golf clubs, private and public, have a membership that includes at least one physician, fireman or policeman. A notice, followed by continual reminders, asking these people to register when they are at the club provides you with an expert in the knowledge of first-aid procedures. All the doctor, fireman or policeman has to do is inform the club when he arrives to play golf. The club notes the time he tees off. Then, should an emergency arise, he can be found quickly. This procedure is not practiced enough at golf courses. If the doctor does sign in, any calls that come in are usually related to his private practice.

A procedure should also be established for calling emergency units. Telephone numbers of emergency units, ambulances, police and hospitals should be clearly posted on every phone. Delays looking for these numbers or dialing the operator can mean precious seconds are lost.

Communications at various points on the golf course should also be investigated. Many maintenance crews carry walkie-talkies connected to either the office switchboard or the superintendent’s office. If your course has this type of communications system, make sure your staff
Is your club adequately prepared to handle emergencies which can occur on the golf course, around the clubhouse or swimming pool? Quick thinking and basic first-aid equipment can avert tragedies.

and the members know about this capability for emergencies.

One of the most extensive (not expensive) communications systems exists at Dellwood CC in New City, N.Y. General manager John Straub got eight physician-members at the club to volunteer and carry club-owned walkie-talkies in their golf bags while they are playing golf. Superintendent Jerry Scafa and his crew also have communications equipment. In addition, there are three telephones located on trees at remote parts of the course. Installation cost of these phones was minimal, and now that they are connected to the club's telephone system; there are no phone company charges. Although every club hopes that these systems never have to be used for emergencies, Dellwood's has already begun paying dividends. "In one particular instance," Straub recalls, "one of our members suffered a heart attack while playing golf. A member of the foursome flagged the club's ranger. He in turn used his communication system to contact the club's switchboard. The switchboard contacted the police and ambulance and also called one of the physicians with a walkie-talkie who was playing golf. He was on a nearby fairway and rushed over and gave first aid. The maintenance vehicles, in addition to carrying communications systems, are equipped with first aid kits and oxygen. Less than two minutes elapsed from the time the member collapsed until a physician was at his side. Fortunately, this story had a happy ending, and the member is still playing golf today, thanks to the quick reaction of members and club officials."

When calling for emergency units, remember they will probably not be familiar with the layout of the club. Make sure someone is available to direct the emergency units to the spot. Time can be lost if they have to drive around trying to find assistance. If a club has emergency exits, or fences along its boundaries, they may be quicker and more accessible than driving to the clubhouse and then out onto the course.

And don't pooh-pooh any of those "strange but true" golf stories. According to Sergeant Brian O'Donnell of the Greenwich, Conn., Police Dept., any combination of accidents can occur on the golf course. O'Donnell, who has lectured to the Metropolitan Section of the Golf Course Superintendents Assn. on first aid for golf courses, has witnessed the impossible and inconceivable. "It is amazing the number of possibilities one can conjure up pertaining to accidents on the golf course," says the 11½-year police veteran. "Falls, drownings in both swimming pools and irrigation ponds, bee stings, being hit by clubs or balls, heat prostration, heart attacks and strokes, golf car accidents, chemical burns, continued
and ingestions, cuts and abrasions on the tennis court, snake bites, maintenance men cut by mowers, lightning, people breaking legs by falling over sprinkler heads, you can go on and on. While accidents and injuries are a pretty morbid subject," O'Donnell continues, "a club, nevertheless, must be prepared to handle any emergency.

"Every year we issue warnings about lightning," says O'Donnell, "and every year we have one or two people at a golf facility struck down. We had an incident last year," he relates, "where a person was struck by lightning as he was playing tennis. Fortunately, a passing patrol car saw the incident and was able to save the person's life. Some golfers want to play that 'one more round,' overexert themselves and have a stroke on the course. These accidents, taken into account with the number of people who are seriously injured by stray golf balls or shattered clubs, leads me to conclude that the golf course is a prime breeding ground for accidents," O'Donnell states. "Constant vigilance to safety must be maintained by all club officials and they must be prepared always for the unexpected."

Roderick A. Granzen, M.D., of the Scarsdale Medical Group and a member of Winged Foot GC, Scarsdale, N.Y., can also testify to the eerie and unpredictable nature of accidents which can haunt a golf club. "Electrocution by lightning is not that rare on golf courses," says Dr. Granzen. "If a person is struck by lightning," Granzen says, "he is either 'dead' or severely burned. In some cases there is no evidence of injury but the sudden shock just stops all of the life giving functions. In one case," he recalls, "a person was struck by lightning, and because there were no visible signs of life he was presumed dead. When the emergency units arrived, he was given mouth-to-mouth resuscitation and closed chest cardiac massage and actually brought back to life."

Some of the basic equipment which clubs should carry, according to O'Donnell and Dr. Granzen, is just lying around the club and can be made useful by using a little ingenuity. A club can purchase a stretcher, but an important piece of equipment which can be fabricated and serve the same function is a fracture board. The fracture board can be made of three-fourths- or one-inch plywood, 2 1/2 feet wide and approximately 6 1/2 feet long. Hand holds should be cut around the sides and straps can be added. This device can be used to transport persons with broken bones, neck or spinal injuries. Although it goes without saying that injured persons should not be moved unless absolutely necessary, some areas of the golf course are inaccessible, this means of transportation may be necessary. Also, swimming pool accidents, when a person dives into the pool and hits his head or neck on the bottom, are frequent. Damage is generally done to the neck or spinal region, and the person normally should not be moved. However, if he is in the water, he must be taken out. A fracture board at poolside can be placed under the victim while he is still in the water. Because it is rigid, it assures that broken bones are not dislodged or moved. A pillow should also be attached to the fracture board.

A very basic item and therefore one normally overlooked are blankets. They not only provide additional padding for the fracture board, but more importantly, maintain the body temperature, not overheat- ing, but preventing chills or shock from setting in.

Several good first-aid kits are also a prerequisite at every course. Not one with just bandages, aspirin and methiolate, but one with large-type battle dressings for packing a wound or gash. Tournequets are generally included, but, and this is the case of all equipment and procedures, they must be used only by qualified and knowledgeable personnel.

Inflatable splints are also valuable and could prevent permanent physical damage should a person need to be moved before help arrives. They are simple to operate and fit over shoes or trousers. Again, this equipment should be handled by qualified personnel.

Medical oxygen and masks are extremely important when filling the first-aid arsenal. Strokes are an everyday possibility for golf clubs and especially for clubs with older memberships. Several oxygen units should be located at strategic locations around the golf course and clubhouse.

For the swimming pool and stroke victims an ambu resuscitation unit, a special breathing bag with mouthpiece is literally a life-saver. However, until this equipment arrives, rescue breathing in the form of mouth-to-mouth resuscitation must be administered. Both Dr. Granzen and O'Donnell point out the differences between an oxygen unit and the resuscitation unit. "Oxygen is great, if a person is breathing and air can reach his lungs," Granzen says, "however, it doesn't do any good if the air passage is blocked. For this reason, a resuscitation unit is vital, because it may get the victim breathing again." Oxygen can be connected to this unit. The resuscitation unit sells for about $200. Both recommend the club have at least two, one at poolside and one in the clubhouse.

Salt tablets are a must at every club. They should be located in the locker room and at some place on the back nine. Members should be encouraged to use them for replacing salt lost through perspiration and to help prevent heat prostration. Plenty of water should be drunk with the salt tablets to prevent nausea.

Insect sting kits provide equipment not available in regular first-aid kits. They are for extreme allergic reaction to insect stings. They contain adrenalin for acute reaction. (Adrenalin can be administered, by non-physicians in an emergency. For legal questions refer to the Good Samaritan Law discussed later.) According to O'Donnell, emergency units treat insect sting reactions as a code one emergency, their highest, because they can be fatal in minutes. The reaction affects the nervous system and may cause suffocation and/or shock. There's no time to wait around for help to arrive in this instance. Just head for the nearest hospital.

Anti-venom snake bit kits should be purchased if poisonous snakes are common in your area. Such kits are best used only if early transportation to the hospital is unavailable. Again, action should be taken by a qualified person, but the club must have the equipment on hand for him to use.

Golf course chemicals can also cause accidents. Although it may happen to someone on the superintendent's staff, chemical ingestions and burns are more likely to occur to the curious child who wanders around