

CONTROL INSECT PESTS BY SPRAYING.

By Dr. S. W. Fletcher, Head of the Department of Horticulture, State College.

SPRAYING is the art of controlling injurious insects and diseases by covering the plant with certain chemicals that kill these pests. The chemicals may be applied with water, as in ordinary spraying, or in powdered form, as in dusting.

Spraying is the chief, but not the only means, of controlling pests. Sanitary measures help, such as prompt burning of the prunings, and plowing under leaves that are diseased, as with apple scab or mummied peaches that have rotted with the brown rot fungus. Open pruning makes conditions in the tree less favorable for disease. Much may be done in the selection of varieties that are least susceptible. The tilled orchard is less liable to certain troubles than the sod orchard. Nevertheless, all orchards, both sod and cultivated, must be sprayed or dusted, in addition to these other precautions.

Should Know Their History.

Spraying by rule of thumb seldom is satisfactory. The grower should know the pests he is spraying for and their life history. We spray to control three types of pests: chewing insects, sucking insects and fungous disease. It is necessary to use a different class of spray for each type of pest.

Chewing insects are those that bite the tissue of the leaf or fruit, and take it into the stomach. Examples are the potato bug, currant worm, tent caterpillar and codling moth which makes wormy apples.

Chewing insects are controlled by spraying with a poison which the insect takes into its stomach with its food. Arsenic is used mostly, principally in the form of arsenate of lead. Formerly Paris green was used, but it is not as dependable as arsenate of lead.

Sucking insects do not bite or chew their food, but suck up the juices of the plant thru a long, tube-like mouth part. This is thrust beneath the surface of the bark, leaf, or fruit, where no spray can be placed, hence spraying with arsenate of lead is useless against them. Examples are the common plant lice, of many species, the scale insects which are merely plant lice covered with a shell and red bug.

The sucking insects are controlled by spraying, not with a stomach poison, but with a penetrating caustic material that will kill them when it strikes their bodies, such as lime-sulphur spray winter strength, oil sprays, soap sprays, and tobacco sprays. When tobacco is used in dusting, the insect is killed by suffocation or asphyxiation by the fumes of the nicotine.

When to Apply Spray.

In spraying for chewing insects, the spray may be applied before the pest appears, and the chemical will remain on the fruit or leaves for some time, until the insects begin to feed. In spraying for sucking insects, on the other hand, nothing will be accomplished unless the insects are present at the time the spray is applied, since the spray kills by contact. Hence, the grower waits until

the aphids have hatched, and are feeding on the opening buds, before he sprays for them.

A fungous disease is a low form of plant life, not of insect life. It differs from ordinary plants, chiefly in the fact that it contains no chlorophyll, or leaf green, the sole means by which a plant can manufacture plant food. Hence it lives as a parasite on higher plants, which do have chlorophyll. The fungous disease propagates by means of a multitude of very minute seed bodies, called spores. These are disseminated by the wind and other agencies. When they fall on the leaf, fruit or bark they germinate in the presence of moisture and temperature, just like a seed, and send their roots called mycelium, down into the tissue of the plant, for the food material that the plant has made for itself.

Then It's Too Late.

After the spore has germinated, and has sent its roots down into the host plant, no spray can kill it. The vulnerable point in the life history of a fungous disease is the spore. It can be killed before it germinates, usually with a spray containing copper, as in Bordeaux, or sulphur, as in lime-sulphur spray. Common examples of fungous diseases are potato blight, apple scab, and brown rot of peaches, plums and cherries.

Most of the common enemies of plants fall into one of these three classes, and can be controlled by spraying. A few serious troubles are not amenable to spraying treatment. Among these are the so-called "physiological" diseases, which, so far as now known, are not due to a distinct germ, as is the fungous disease. The "Baldwin spot," or bitter pit, of apples is an example.

The fire blight of apples, pears and quinces, also, cannot be controlled by spraying, since the bacteria which cause this disease work beneath the bark, where no spray can reach them. We depend on resistant varieties, keeping the trees growing slowly, and cutting out the winter hold-over cankers, to control blight.

The Aphids Are Coming.

ACCORDING to an intensive survey of conditions in southeastern Pennsylvania counties and reports from farmers in the State the eggs of green and grain aphids, usually so numerous on apple trees at this time of the year, are few in number this spring. It is expected that there will be no severe out-breaks of these two species the coming summer.

Green and grain aphids are not the ones which damage apples the most, however. The rosy aphid is the most injurious, according to G. F. McLeod, assistant extension entomologist of the Pennsylvania State College, and may be present even if few eggs of the other aphids are found. Experiences of a quarter of a century have shown this to be true.

Fruit growers who desire to protect their fruit from the aphids may do so by putting nicotine in the lime-sulphur-nicotine combination of the delayed dormant spray if they are not using oil emulsion or oil sprays. If the latter are used, close watch should be kept for the rosy aphids. The entomologists say that if found, an application of nicotine in the pre-pink spray at the rate of one pint of nic-

otine to 100 gallons of water will end the insect's existence.

Two Engineering Feats Held Unique in History of Utilities Industry.

Two feats recently recorded are said to be unique in the history of public utility engineering. They were undertaken for the improvement of gas and electric service, says the Pennsylvania Public Service Information Committee.

The highest-powered submarine cable ever built has been stretched under the Mississippi River at St. Louis. The cable is made up of three copper conductors, carries 33,000 volts, is nearly five inches in diameter, and weighs twenty-five pounds to the foot. It was laid from barges and anchored on the bottom to prevent drift. It also had to be spliced in mid-stream.

To make the splice the two ends of the cable were stripped of all armor and insulation, the conductors were firmly connected and then wound with tape. Over the joint a lead sleeve was placed and filled with hot oil to boil out all air and moisture, and the cable sunk to the river bed.

The second triumph over the forces of nature took place in central New York State where a gas main between Auburn and Geneva was laid under three streams and over a fourth. Trenches were dug for the six-inch main across the beds of the streams. The aerial main rests upon a steel bridge eighteen feet above the water and is carried on concrete piers. This is said to be the most skillfully laid pipe-line in the world.

Carrier Pigeon Halts for Warmth and Rest.

Fighting the storm and doubtless carried off its course by the high wind prevailing recently, a carrier pigeon alighted exhausted on the window sill of the home of Mr. and Mrs. Charles Levegood, of Jersey Shore. Mrs. Levegood opened the window and the pigeon flew inside, grateful for the opportunity for rest and warmth.

The pigeon, after having been fed by Mrs. Levegood, was ready to continue its flight to an unknown destination. Whether it came and whether bound was a mystery.

A band on the right leg bore the following number AJ25C3140.

Mrs. Levegood released the pigeon after keeping it in her home until it had fully recovered from its battle with the elements.

Solution to Cross-word Puzzle No. 6

C	H	A	R	M	B	A	I	T	S	
R	M	O	O	D	C	A	R	T	P	
E	M	D	O	R	M	A	N	T	B	
S	A	P	N	E	E	D	S	P	E	
T	R	A	P	A	N	D	F	E	A	
S	T	E	A	M	Y	E	A	R	N	
T	A	P	R	I	M					
M	E	L	T	S	V	A	L	I	D	
E	A	R	S	T	E	A	S	T	O	
W	I	N	T	R	A	P	S	E	A	
E	D	O	R	A	T	I	O	N	S	
R	S	W	O	P	D	R	O	P	L	
S	P	I	L	T		T	R	A	M	S

HOW TO SOLVE A CROSS-WORD PUZZLE

When the correct letters are placed in the white spaces this puzzle will spell words both vertically and horizontally. The first letter in each word is indicated by a number, which refers to the definition listed below the puzzle. Thus No. 1 under the column headed "horizontal" defines a word which will fill the white spaces up to the first black square to the right, and a number under "vertical" defines a word which will fill the white squares to the next black one below. No letters go in the black spaces. All words used are dictionary words, except proper names. Abbreviations, slang, initials, technical terms and obsolete forms are indicated in the definitions.

CROSS-WORD PUZZLE No. 1.

1	2	3	4	5	6	7						
8				9			10	11	12			
13				14			15					
16				17			18		19			
20			21				22		23			
24	25				26				27			
28				29	30		31			32		
33		34					35		36		37	
38	39		40				41	42			43	
44		45		46						47		
48			49		50					51		
52				53						54		
				55						56		

(©, 1926, Western Newspaper Union.)

- Horizontal.**
- 1—Secondary color
 - 5—Primary color
 - 6—Scare
 - 9—in Russia, an organized massacre of the Jews (pl.)
 - 13—Frozen water
 - 14—Hobo
 - 15—Bench
 - 16—Period of time
 - 17—Mohammedan sacred book
 - 19—River (Spanish)
 - 20—Father
 - 21—Disinfectant
 - 23—To act
 - 24—Enough (poetic)
 - 28—To frighten
 - 28—Prescribed course of food (pl.)
 - 31—To rub out
 - 31—To rub out
 - 36—Irritation of the skin
 - 38—Episcopal (abbr.)
 - 40—New Jersey city
 - 43—Conjunction
 - 44—Short sleep
 - 47—Printing measures
 - 48—Extent
 - 50—Arid
 - 52—A supernatural being believed to warn a family of an approaching death
 - 54—Pierce
 - 55—That woman
- Vertical.**
- 1—Highway man
 - 2—A competition
 - 3—Native metal
 - 4—You and I
 - 5—A love story ending happily
 - 6—For example (abbr.)
 - 7—Physician (abbr.)
 - 9—Makes a noise like a cat
 - 10—Over (poetic)
 - 11—Domestic servant
 - 12—To bend over
 - 14—Derivative exclamation
 - 16—To mimic
 - 17—Kansas City (abbr.)
 - 18—Not distant
 - 22—To snap
 - 27—Established (abbr.)
 - 28—A trap
 - 29—Sour
 - 30—Motorist who hurries
 - 32—Management of domestic affairs
 - 33—To arrest again
 - 36—A trap
 - 37—Hours (abbr.)
 - 39—Kind of rubber
 - 41—To attempt
 - 40—Writing implement
 - 47—Shield
 - 51—Sea eagle
 - 54—Southern state (abbr.)
 - 42—Bone
 - 25—Lubricant
 - 49—Ember
 - 53—That man

Solution will appear in next issue.

Graduation Day

is one of the Milestones in Life's Journey one Never Forgets



Graduation Day

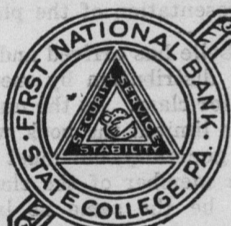
calls for a GIFT, which during the passing years will be a reminder of old friends and of old times; a life-long helper—and then handed down.



The name of this firm assures dependability. The Boy or Girl Graduate possessing one of our beautiful Watches, Rings, or other piece of Jewelry, is assured many years of service and usefulness.

F. P. Blair & Son
JEWELERS.....BELLEFONTE, PA.

The Smallest Watch in the World will be on display in our window until Monday. Value \$1,000.00.



Hidden Jewels

Some women are content to hide their jewels. But this is taking a big risk—burglars may come in and carry them away, or fire break out and burn them. In our Safe Deposit Vault you can rent a Private Lock Box for \$2.00 and up per year.

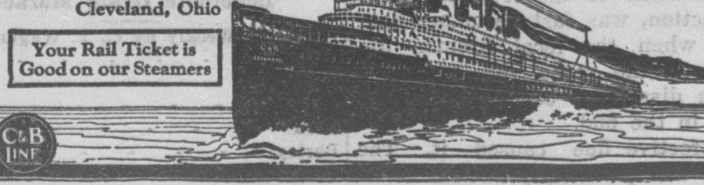
THE FIRST NATIONAL BANK
STATE COLLEGE, PA.
MEMBER FEDERAL RESERVE SYSTEM

A restful night on Lake Erie

on one of the Great Ships of the C & B Line makes a pleasant break in your journey. A good bed in a clean, cool stateroom, a long, sound sleep and an appetizing breakfast in the morning.

Steamers "SEEANDBEE"—"CITY OF ERIE"—"CITY OF BUFFALO"
Daily May 1st to November 15th
Leave Buffalo— 9:00 P. M. } Eastern Standard Time } Leave Cleveland—2:00 P. M.
Arrive Cleveland 7:00 A. M. } } Arrive Buffalo— 7:00 A. M.
Steamer "CITY OF BUFFALO" arrives 7:30 A. M.
Connections for Cedar Point, Put-in-Bay, Toledo, Detroit and other points.
Ask your ticket agent or tourist agency for tickets via C & B Line. New Tourist Automobile Rate—\$7.50.

Send for free sectional puzzle chart of the Great Ship "SEEANDBEE" and 32-page booklet.
The Cleveland and Buffalo Transit Co.
Cleveland, Ohio
Four C & B Steamers in Daily Service
Fare \$5.50



Your Rail Ticket is Good on our Steamers



News that Really is Front-Page Stuff!

Nothing less than a story announcing the repeal of the income tax will interest more men than the news that the Griffon Clothes for Spring have arrived.

Come in and see these finely tailored productions of the Griffon tailors—and see if you don't agree with us as to the importance of their arrival.

A. Fauble

Lyon & Company

May Specials

In Every Department

The Choice of Apparel for wear now should be Governed by what will be Practical for the Warmer Days. An Exceptional Display in our Ready-to-Wear Department

New Spring Coats in all shades—Charmeuse, pariet twill and twill cord; in straight lines or flares—all silk lined, at Special May Prices.

Silk and Rayon Dresses in all shades. Styles to suit the slender and the stout.

Special—Eleven Silk Dresses (colors and black) values \$25.00—May sale price \$8.75.

A collection of the neatest, smartest Dresses, Creepers and Rompers (in all colors) for the little tots from 1 to 6 years.

...Carpets and Rugs...

Large Rugs, Small Rugs, Hall Runners, Window Shades, Tapestry, Cretonnes and Draperies at Special May Sale Prices.

Lyon & Company