

Bulgarian Communists on Their Way to Trial



Police of Bulgaria are still combing the country for communists accused of plotting against the government. Some of those captured are here seen heavily manacled on their way to be tried for participation in the cathedral bomb outrage.

WEEVIL IS TRAPPED BY HIS FAVORITE ODOR

GOVERNMENT SCIENTISTS ISOLATE THE SCENT THE DESTRUCTIVE COTTON PEST LIKES BEST AND WILL NOW USE IT TO-BAIT A POISON DEADFALL FOR HIM.

Government scientists, attempting to force to an issue the twenty-five-year battle against the cotton boll weevil, have hit upon a new and unique plan, which, if as successful in the field as it has been in the laboratory, may rid the South of the "million dollar bug" and revolutionize present methods of coping with other harmful insects.

The plan is to lure the weevil to its doom by the peculiar odor of trimethylamine, a chemical constituent of the cotton plant itself, which has been found to attract it. Isolation of this substance was effected by Dr. Frederick P. Power, one of the chemists of the United States Bureau of Chemistry and his associate, Victor K. Chesnut.

Interest in the experiment has been widespread, and naturally so for annual losses to planters, according to the Bureau of Crop Estimates, have been about \$300,000,000 and Colonel Henry G. Hester, statistician of the New Orleans Cotton Exchange, in his last annual report placed total losses for the past five years at \$1,500,000,000. Many cotton gins and oil mills are idle in the south.

Few had heard of the boll weevil in 1892, the year he crossed the Rio Grande from Mexico and proceeded to make himself at home in the cotton fields at Brownsville, Texas. But now with nearly all the cotton belt infested he is a byword in both South and North. At Enterprise, Ala., a memorial fountain has been erected to him by the citizenry. This may seem paradoxical. Farmers of the town, forced into bankruptcy by the inroads of the boll weevil, were forced to plant sugar cane, peanuts, hay and sweet potatoes and prosperity followed this diversification of crops. All this, however, does not help solve the question of the cotton supply's adequacy.

Army airplanes, scattering calcium arsenate in a cloud over the fields have been employed in the battle against the boll weevil. This method proved effective although dusting had to be done under the disadvantages of early dawn or evening, when the dew lay on the fields. Expense of dusting apparatus and the high cost of arsenic have, however, prevented widespread use. About five and a half pounds are required per acre and the cost of arsenate per pound is between 8c and 9c. The increase in yield was about 396 pounds of cotton per acre, and the profit scarcely great enough to cover the expense of the munitions of the battle.

Casting about for a cheaper mode of chemical combat, the theory of odorous attraction was brought into play. This theory, summed by Dr. N. E. McIndoo, insect physiologist of the Bureau of Entomology, Washington, and upon which Dr. Power and Mr. Chesnut built up their intricate experiment, is: "Insects, like all other animals, acquire their information concerning the world through their senses, and this is accomplished through means of impression or stimuli affecting the sense organs."

"The world to man is chiefly a world of visions or sights, and all other senses play a secondary part. The world to a bloodhound is chiefly a world of scents, odors or smells, and in this case other senses play a secondary part. The world to such insects as ants and bees is not chiefly a world of scents, odors or smells, and sense plays such an important part in their lives that should it be suddenly destroyed these insects could no longer exist."

"Of all the human senses, we seem

to know least about the olfactory sense. This is pardonable because, in us, the sense of smell is more or less rudimentary. But insects have evolved a new science and are capable of analyzing and classifying odors, many of which are unknown to us."

The boll weevil in captivity, difficult to manage and not given to many preferences is attracted by nothing so much as the bud of the cotton plant, called the "square." For it, Dr. McIndoo finds, a weevil will forsake syrup and honey or even young cotton leaves. Young weevils, just hatched, will head straight for a cotton field though it may be several miles distant. So much for the theory, which, by and large Dr. McIndoo, through painstaking experiments, has proved.

It remained for the Bureau of Chemistry then, to find what odor the million dollar bug liked best. And, walking through the cotton fields at Tallulah, La., where in the summer, 1923 ten acres of choice upland cotton had been set aside for their use, Dr. Power and Mr. Chesnut could detect no odor at all. When the leaves were crushed and bruised, a faint, lemon like odor could be detected. They must, the chemists concluded, wrench from the cotton plant the secret of its chemical composition by subtle laboratory methods.

As plant chemists, Dr. Power and his associate felt themselves competent to do it. A short time before they had analyzed the elusive odor of the apple, and once possessing a gram or so of its essential oil, had reproduced it synthetically and dished up "apple ice cream" for the consumption of a group of Washington scientists. This feat had verged on the miraculous because the original apple oil is exceedingly volatile.

Construction of a "field laboratory," with the proper equipment of stills was the first step in their attempt to extract cotton bud essence. Final work was done in the phyto-chemical laboratory of the Bureau of Chemistry in Washington. Not long afterward announcement was made of progress at a meeting of National Academy of Sciences. The story of the "job" is perhaps, best told in Dr. Power's own words:

"It has been recognized that the cotton plant possesses a specific attraction for the boll weevil and this has been attributed to some volatile odorous substance emitted by the plant which could be perceived at a considerable distance. It has been considered, accordingly, by Dr. L. O. Howard, chief of the Bureau of Entomology, United States Department of Agriculture that if an odorous substance could be identified which by tests would be found attractive to the insects it might be possible to produce it in sufficient quantities to permit its use as bait.

"In pursuance of this plan the Bureau of Chemistry was requested to undertake a comprehensive study of the subject, and the investigation was begun in the summer of 1923. As the primary purpose was to ascertain the chemical character of the odorous or volatile substances it was apparent that these could best be obtained by the distillation of the cotton plant with the aid of steam. This operation was conducted during the months of July and August at Tallulah, La., where all the facilities of the Delta Laboratory of the Bureau of Entomology were placed at our disposal.

"A field of choice upland cotton comprising about ten acres, had been

selected for our use, and this was comparatively free from infestation of the weevils. The plants were cut off a few inches above the ground and the material employed consisted chiefly of the foliage, together with the flowers, squares and a few small bolls. The coarse, woody stems were rejected.

"Not more than two hours elapsed between the cutting of the plants in the field and the beginning of distillation processes. The total amount of material distilled was 7,255 pounds, or 3,200 kilograms, and the total original distillate amounted to about 1,400 gallons, or 5,300 liters.

"The next step in the process was to concentrate the original distillate in order that the odorous constituents might be contained in a smaller volume. This was accomplished by its redistillation from a smaller apparatus. The complete examination of this concentrated distillate, which amounted to 78 gallons or 295 liters, was conducted in the Washington laboratory.

"The so-called 'essential oil' of the plant was obtained by extracting a portion of the concentrated distillate with ether. The yield of this product was about 0.003 per cent of the material employed. It was a pale, brownish limpid liquid, having a strong, rather agreeable and persistent odor.

"The concentrated distillate, which represented all the odorous and volatile constituents of the plant, was the product employed for their separation and identification. It was found to contain the following individual substances:

—Methyl alcohol in large amount and traces of acetone, hmyl alcohol, in relatively small amounts, with traces of aldehyde of higher carbon content; a phenol, in exceedingly minute amount (a substance either a derivative of cresol or a phenol that possesses very similar characters; an optically new active, tricyclic sesquiterpene; an optically inactive dicyclic sesquiterpene; a small amount of a paraffin hydrocarbon; a blue oil which probably contains unsaturated hydrocarbon, azulene; formic, acetic and caproic acids, the latter in small proportions, which evidently was present to some extent in combination with the previously mentioned alcohols and esters, ammonia and trimethylamine."

Ammonia and trimethylamine were found present in appreciable amounts, with the ammonia largely predominating. Both were found to be emanations from the living plant and have been identified also in the dew collected from the cotton foliage.

Investigations revealed that as small an amount of trimethylamine as 0.0000005 gram can be detected distinctively by its odor.

Further experimenting revealed that the trimethylamine held a real attraction for the boll weevil when exposed to him in a solution of carefully regulated strength. The solution must not be too strong, but it must be strong enough. It must be just a little more attractive to the "million dollar bug" than the cotton plant itself if the insect is to be lured from one to the other.

Dr. McIndoo, working with an instrument of his own invention and construction, which he calls an "insect olfactometer," has been trying to find out just what the correct dilution is. The olfactometer is of glass tubing and is so arranged that air, passing through two tubes, may carry a whiff of this or that "smell"—or so that one may waft an odor and the other pure air. The insect under observation walks through a larger tube to the fork, where he is greeted with a "bug perfume," intended either to attract or repel him.

But if the plan works the death knell of the weevil will have sounded. Trimethylamine can be produced cheaply and in adequate quantities. Dr. Power says it is present in sub-

stantial amount in the waste product of beet sugar and that for a long time a use for this wastage has been sought. Incidentally, trimethylamine is the only odorous constituent of the cotton plant that could be produced easily and inexpensively. On it Dr. Power has pinned his faith.

Home Demonstration Work.

The season is now beginning for the marketing of cucumbers. The acreage is a great deal less this year and with other growing sections well cleared off the market the farmers are expecting fair prices for their crop. Grading machines will be used to a great extent as well as Federal shipping point inspection. There will probably be about two hundred cars of cucumbers loaded at Blackville which have been machine graded and inspected. We believe this is a great forward step and will mean much to the cucumber interest. There will likely be three to four hundred cars loaded at Blackville in total this season.

Most farmers are now applying a side application to their cotton at this time where they have not done so already. Most of them realize that to get the most benefit from the use of nitrate it should be applied soon after chopping.

The finding of large numbers of boll weevils in the cotton fields at this time is causing farmers to feel nervous. They are beginning to poison now. Three applications of dusted calcium arsenate applied beginning with the first application as the first squares get large enough to puncture followed in five to seven days with another and then another after waiting a week, will go a long way toward controlling the weevil. Two pounds the first application, three the second and four the third should be applied.

To the Patrons of The Barnwell Sentinel.

The New Sentinel Publishing Company, which has had the control and management of The Barnwell Sentinel, has been compelled by reason of financial stringency to discontinue the independent publication of The Sentinel and has disposed of its plant and franchises to Mr. B. P. Davies, of Barnwell. It is gratifying, however, that the paper will not cease its existence, but will be published in connection with The People and its name and that of The People will hereafter head the publication.

Mr. Davies assumes the subscrip-

All Lines of Insurance
Farm Coverage
a Specialty

Calhoun and Co.
P. A. Price, Mgr.
Bank of W. C. Bldg.

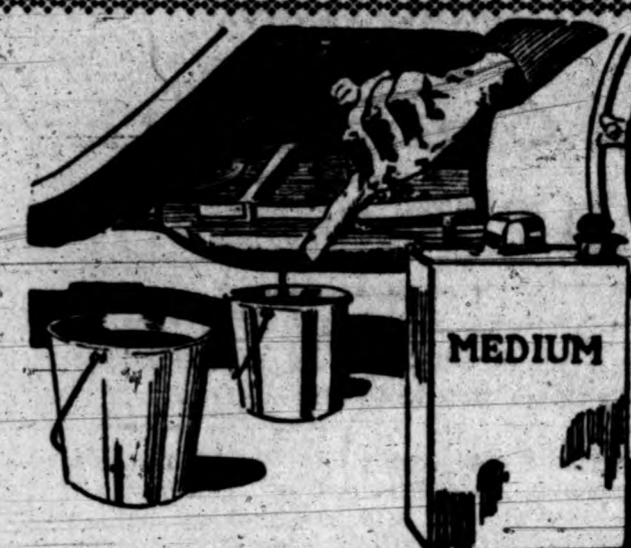
Wm. McNAB
Representing
FIRE, HEALTH AND ACCIDENT
INSURANCE COMPANIES.
Personal attention given all business
Office in Harrison Block, Main St.

BARNWELL, S. C.
666
is a prescription for Malaria, Chills and Fever, Dengue or Billious Fever. It kills the germs.

tion list and the outstanding job printing contracts of The Sentinel, and the subscribers of The Sentinel will continue to receive the amalgamated newspaper during the period of their subscription; whilst those holding job printing accounts will have the work performed in pursuance thereof by him.

While it is a source of regret to the publishers of The Sentinel that this as an individual enterprise is forced to end, yet the public is to be congratulated on having both of the papers

combined, which will carry superior advantage to the subscribers of both and better contribute to the development of the county. In retiring from the management of The Barnwell Sentinel, the New Sentinel Publishing Company bespeaks for the new and combined enterprise the continued and expanded patronage of its readers, that the influence of both papers, so united, may have their cooperation to the upbuilding of Barnwell County in all of its departments of life.
The New Sentinel Pub. Co.



Energetic Gasoline and Good Oil, Too

YOU'LL get both of these at the Barnwell Filling Station and lots of extra service. Then, too, the charge is right and that makes it more reasonable.

Our men are experts in the matter of lubrication and choosing the proper mixture for your car. They'll be pleased to help you.

Barnwell Filling Station

Lloyd Plexico, Mgr. Barnwell, S. C.

LONG TERM MONEY TO LEND

Farm Loans 6 per cent, large amounts. Town property in Barnwell, residential and business, 7 per cent. Loans procured promptly at lowest cost. Allendale, Bamberg and Barnwell Counties.

THOMAS M. BOULWARE

Attorney-at-law Barnwell, S. C.

HIGH UP IN THE SOUTHERN APPALACHIAN MOUNTAINS

OF WESTERN NORTH CAROLINA EASTERN TENNESSEE and NORTH GEORGIA
Land of the Sky

Are Many Good Places to SPEND YOUR SUMMER VACATION

Reduced Summer Fares to All Summer Tourist Resorts

Tickets on Sale Daily Beginning May 15th Good Until October 31st, 1925 Write for Summer Vacation Folder

Consult Ticket Agent SOUTHERN RAILWAY SYSTEM

THE CITADEL The Military College of South Carolina. VACANT SCHOLARSHIPS

A vacant scholarship in Barnwell County will be filled by competitive examination to be held at the county seat on Friday, July 10th. Applicants must be at least sixteen and not more than twenty years of age, and must meet the educational requirements for admission to the freshman class, which are a certificate from an accredited four-year high school, covering fifteen units, or an equivalent examination.

This scholarship covers tuition, board, hospital, laundry, room, and an allowance for uniforms. The Citadel is a liberal arts college, offering electives in civil engineering, science, language and literature, and business administration.

It has an excellent military system, having been rated by the War Department continuously for many years as "distinguished military college." An inspector says of it:—

"It is so superior in all its methods, it must be classed alone."

It provides thorough physical training of all students under competent supervision, and encourages all athletic sports.

FOR CATALOGUE AND BLANKS, WRITE TO—

Col. O. J. Bond, President

The Citadel,

Charleston, S. C.