

"Osmics", the Study of Odors

Physiology

Who will found a science of odors? Dr. N. E. McIndoo, of the U. S. Bureau of Entomology, himself an expert on odors, presents the claims of osmics as a possible new science and engages in lively defense of the humble faculty of smell.

"Our lives," says the scientist, "are frequently saved by our noses, yet we hold their service in disrepute. They warn us against the presence of poisonous gases, reveal the existence of foul places where disease germs breed, aid physicians in conducting of diagnosis, chemists in making an analysis and may even help plumbers locate leaks.

"They are responsible also for a great deal of pleasure. It is the appetizing odor of food, rather than its taste, that pleases, the bouquet of rare wines. The sense of smell is the basis of a great industry, the manufacture of perfumes, which can be compared to the telephone, radio, and phonograph industries, based on the science of acoustics, or the motion picture industry, based upon the sense of sight and the science of optics."

The late Alexander Graham Bell; Kenneth, a Scottish professor at the University of Edinburgh, and the chemist, Hendrick, have been enthusiastic promoters of the new science. In view of the increasing importance of odors in the world of scientific experimentation and in medicine, Dr. Bell prophesied that some day, someone will "measure the difference between one smell and another." Hendrick predicted the founding of a special "Institute of Osmics," where research could be coordinated.

The staff, he says, would comprise at least a physiologist, psychologist, chemist, zoologist, botanist, anthropologist, rhinologist, and statistician, also the services of an embryologist, a geneticist and a paleontologist. Without committing himself quite so definitely, Dr. McIndoo agrees that more cooperation between the various groups of scientists interested in the subject is absolutely necessary before the science can be founded.

Referring to the nose as "the Cinderella of our organs," Hendrick philosophizes thus upon the scorn accorded its services and finds that the ancient Arabs actually exploited the sense of smell:

"Was it some sainted anchorite," he



THE SQUARE OF CLOTH HAS BEEN SATURATED with geraniol, an attractant for Japanese beetles, and the odor has lured the pests to their doom. The peach tree near by, upon which they are feeding, has been generously sprayed with poison

muses, "or some other enthusiast of imagination and influence, who found the use of the human nose to be dangerous to the soul? We do not know, but in some way or other the conscious exercise of the nose became taboo and this entered into the folkways. It has ceased to be a sin, but it remains an impolite topic.

"The Arabs, in their days of glory, were not ashamed of their noses and planted scented gardens, wonderfully devised, so that he who walked through them, or whiled away an hour there, might rejoice in a cultured delight in odor. They were so arranged that at the entrance the olfactory sense would be struck by a pervading and strong smell, not necessarily of a pleasant nature. From this the path would lead gradually through less coarse fragrances to those more delicate, until at the end there would be reached an odor of exquisite quality which only the cultured nose could appreciate."

Scientifically speaking, the sense of smell has proved of increasing value and its usefulness is coming more and more to be recognized. Manufacturers of illuminating gases, which may be inodorous, add odorous impurities to them as a safeguard against poisoning through carelessness.

Use of the sense of smell may be considered of medico-legal importance, since certain diseases have

characteristic odors and in practising medicine doctors are using their noses more and more as an aid in diagnosis. Bacteriologists identify by their odors different cultures and chemists are constantly using their olfactory sense as an aid in analysis.

In the field of industry and agriculture, the sense of smell is being very definitely exploited. Leaks in boilers and pipe lines are detected by mixing oil of peppermint or wintergreen with the water or air that is forced through them; then smelling at the cracks and joints. A more accurate method, says Dr. McIndoo, is to use catnip oil and let a cat locate the leak. Experiments also have been conducted in the use of odors as warning signs in mines.

Trading on the insect's sense of smell, infinitely more acute than that of any animal or human being, entomologists have been able to control certain pests through the use of attractants and repellents. The problem is to find a food that will prove more attractive to the insect than the plant attacked, or some material whose odor is distasteful enough to drive him off.

Effective warfare has been waged against grasshoppers, notably in Western Canada, through the use of such an attractant. The "ammunition" consisted of literally tons of bran, sawdust, molasses, lemons, arsenic, Paris (*Turn to next page*)

"Osmics"—Continued

green and amyl acetate, nicely mixed—a concoction that lures them to their doom. Poisoned bran baits are also used to control army worms, cutworms, crickets and ear-wigs, saving farms millions of dollars.

Ants, notoriously, are fond of sweets but are very exacting in their tastes. The highly destructive Argentine ant, which threatened Mississippi in 1922, had been almost eradicated four years later by the use of an attractant containing honey, sugar, water, sodium arsenate, tartaric acid and benzoate of soda. In preparing this bait vessels and utensils must be scrupulously clean. The ants will not touch it if it becomes accidentally flavored with an undesirable substance.

The olive fly, worst enemy of the olive tree, responds to a mixture of water, molasses and sodium arsenate, used as a spray. Other flies such as the Mediterranean fruit fly and the melon fly are being controlled to a certain extent by similar baits and work is now being carried on with houseflies and destructive moths and beetles, notably the codling moth, which causes wormy apples, and the Japanese beetle, which seems to like geraniol.

Moth balls are a repellent familiar to everyone. So is citronella, used as a mosquito chaser. Repellents are used in controlling other insects also but are not considered as effective as attractants.

In spite of these discoveries, which demonstrate conclusively the practical value of research along the olfactory line, a great deal of additional work will be necessary before this sense can be exploited fully. As facts are brought out one after another, there is being builded gradually a bona fide science of osmics. Classification of odors has been advanced to the point where certain cousinships are recognized, but it is not known yet just what an odor is.

It is of primary importance to ascertain whether, like sound, it is a vibration and capable of being reflected or whether it is an emanation that can be weighed. Fundamentally, smell is still as much of a mystery as electricity.

Science News-Letter, August 11, 1928

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According to present plans, Dr. Church will return to the United States some time in October, 1928, and will write you personally. Assuring you that the "Leica" Cameras were an invaluable part of our equipment, I remain,

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Experiments indicate that X-rays may be used to detect dangerous weakness in trees that appear sound on the surface.

A ton of wheat takes from the soil about 47 pounds of nitrogen, 18 pounds of phosphoric acid, and 12 pounds of potash.

Many jewelry firms test suspected diamonds under ultra-violet light, which makes the real gems glow, while imitations appear lifeless.

Norway is to have a floating fish-meal factory which will cruise along the coast and gather up fish scraps from factories to make meal.