SCIENCE NEWS

Science Service, Washington, D. C.

DDT ROTENONE SPRAY

SPRAYING with DDT and rotenone mixture provides a practical and economical solution of one of the major problems of cattle raisers in tropical and sub-tropical regions, control of cattle ticks, it was announced at the Third Interamerican Agricultural Conference by Dr. Earl N. Bressman, Director of the Interamerican Institute of Agricultural Sciences. It is expected that the new method will be applicable from the northern provinces of Argentina to the southern United States.

Cattle-dipping vats, which have been widely successful in tick control in temperate regions, have had considerably less success in the tropics, for a variety of reasons. Over large areas the necessity of depending on relatively untrained personnel resulted in high mortalities because of poorly designed dipping vats, arsenic poisoning of cattle, mechanical abortion and other injuries. Furthermore, the intense tropical heat often caused deaths from overheating, especially in the case of animals that had to be driven long distances to the vats—which often cost in the neighborhood of $4000 each—and the cattle suffered from decreased milk production and, in the case of the ubiquitous oxen, from lack of rest following dipping.

After 110 experiments over a period of three years, Dr. Robert L. Squibb, of the Division of Animal Industry of the institute, developed a new spray solution, specific for use against the cattle tick, a mixture of DDT and rotenone. One hundred cubic centimeters of the solution is sufficient, used as a fine spray, to cover an animal, at a cost of as little as one half cent, depending on local conditions. A wide variety of spraying equipment, ranging from a hand-operated flit gun to power equipment, secures equally effective results. A tick mortality of 95 per cent. has been recorded from animals with an infestation of as high as 40 ticks per square inch.

Length of effectiveness of the treatment varies with climatic conditions, as does cattle dipping, and the solution has continued to give protection against the ticks up to 80 days. Spraying between the animals' legs and in body crevices is not necessary since once engorged ticks have dropped off, the animal is not reinfested during the period of spray effectiveness. More than 7,000 applications have been given over a period of nine months, with no indication of a poisonous tendency.

ITEMS

A NEW platinum material, for laboratory ware such as crucibles and other articles now made of platinum alone, has been developed and is a combination of all platinum-family alloys. The new product, developed because of war necessity and now thoroughly tested in actual use, is claimed to be superior to the platinum ware it may replace. The new material is a product of the Oscap Manufacturing Company, and it has been tested over months in Army, industrial and university chemical laboratories, and found satisfactory in all, it is said. The color of the new material is the silver gray of regular platinum, but slightly darker. It is non-oxidizable, has high tensile strength and flexibility, and is resistant to all acids except boiling aqua regia, a mixture of concentrated hydrochloric and nitric acids.

A NEW non-petroleum lubricant for automobiles, aircraft and other internal combustion engines has been developed and tested that is claimed to have unusual advantages over mineral oil, particularly in cold weather. Its properties are quite different in many respects from oils derived from petroleum. It is wax-free and can be made to any desired viscosity. The lubricant is a product of Carbide and Carbon Chemicals Corporation and is now being produced in commercial quantities. Its use in engines has been studied for several years in a large number of vehicles. Large quantities are in use in military equipment, and, at the present time, sale of the material is limited to war uses. No petroleum oils are contained in the new lubricant. It has a density approximating that of water. It is characterized by low change in viscosity with change of temperature. Carbon residue values are very low. Sludge and varnish formation in the engine is practically eliminated when the new lubricant is used, and wear of moving parts is in line with wear experience with ordinary mineral oils.

A COAL tar fuel widely used in the United Kingdom during the war years, and still in use, has been described by the Ministry of Fuel and Power. It is a creosote-pitch mixture, with about equal parts of the two substances, and is made entirely from English-produced materials. The 50–50 creosote-pitch fuel mixture is homogenous, and the so-called free carbon consists of microscopic particles of resinous material, which, when the fuel is held in storage at from 80 to 90 degrees Fahrenheit, remain permanently dispersed. Heating equipment formerly used with other liquid fuels can be used with this coal tar product, provided certain minor adjustments are made. If used with petroleum fuels, the equipment must be thoroughly drained and flushed with hot creosote oil, because if petroleum fuels are allowed to mix with tar fuels, the resinous matter in the latter is immediately precipitated.

AN electrical instrument, so sensitive that it can measure movements, or changes in position, as small as one-tenth of a millionth of an inch, has been developed at the Battelle Memorial Institute, Columbus. It is a tool to measure the position of either slowly or rapidly moving objects without touching the object itself. Its first practical application was in measuring the errors in high-precision lathe spindles used in machining aircraft motor parts. The instrument is also the heart of an apparatus for measuring and recording the changes in crystal structure when steel is heated rapidly, as in electric welding. Other possible, but as yet undeveloped, uses of this electrical micrometer are as a meter to indicate the power output of airplane engines in flight, and as a means of measuring roughness and hardness of metallic surfaces.