

life sciences

LIVESTOCK

Cryogenic branding

The stench of burned hair and skin from a red-hot branding iron on a steer's flank may soon be a thing of the past. The animals suffer pain, and the branded area of the hide is useless for leather. In addition the brand is of low contrast and is poorly visible. A search has been under way for a substitute; it appears that freeze branding may be it.

Maj. Donald J. Johnson of the Army's Edgewood Arsenal in Edgewood, Md., reports branding 109 beagles with an iron cooled to minus 70 degrees C.

The brands were applied in from 5 to 20 seconds, with no evidence of pain in the animals and no struggling. No behavioral changes were noticed after branding. Hair continues to grow in the brand site, but it comes in white. This provides a permanent, high contrast mark.

DIAGNOSIS

Quick antibiotic test

A quick laboratory method for determining the best antibiotic against a given bacterial infection has been developed.

Walter M. Sellers of the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base, Tex., reports that the new method, 24 hours faster than standard procedures, can have results to the physician early enough to guide his choice of drugs in treating a patient.

The new test employs the speed of color change in red blood cells when oxygen is consumed by bacteria. In the presence of effective antibiotics, oxygen is not consumed, and the color of the blood cells remains unchanged.

CYCLAMATES

Sweeteners block antibiotic

Small amounts of commonly used artificial sweeteners block the action of an antibiotic that kills staphylococci, streptococci, pneumococci and other infectious bacteria.

The sweeteners, sodium or calcium cyclamates, apparently keep the antibiotic from being absorbed into the bloodstream, thus preventing it from reaching the site of infection. Dr. John G. Wagner of the University of Michigan at Ann Arbor reports that when cyclamates are present in blood, the absorption of Lincocin (lincomycin hydrochloride) drops about 75 percent.

Recent findings by other researchers suggest that artificial sweeteners interfere with the action of drugs taken by diabetics (SN: 10/26, p. 428).

WATERFOWL

Fingerprinting Feathers

Game biologists go to a lot of trouble every year catching, banding and releasing specimens of waterfowl in order to find out where they've been and where they're going. A duck shot in the Atlantic flyway could have spent the winter at almost any Canadian nesting ground as far as scientists know now; data simply have not been

gathered yet to allow anyone to predict where waterfowl from a particular wintering ground will go. Yet the knowledge is essential in setting reasonable bag limits for the various flyways.

Scientists at Ohio State University in Columbus have developed a method they say may reliably pinpoint a bird's nesting area without the necessity of banding and band recovery from shot birds. Dr. Tony J. Peterle reports that the method involves activation analysis of feathers.

Feathers from birds shot at known locations are cleaned of surface dirt, powdered and irradiated. The resulting secondary radiation from the ground feathers is analyzed in a gamma ray spectrometer for the amount of certain elements absorbed from food found in the nesting areas.

The analytical results from a given bird constitute a kind of fingerprint which can be related to a similar fingerprint from various nesting areas. Thus geese shot in Oregon were found to be high in manganese, indicating they came from the Copper River delta in Alaska, an area naturally high in manganese.

PATHOLOGY

Virus induces diabetes

A virus that causes lesions in the islets of Langerhans, insulin-secreting cells in the pancreas, induces diabetes mellitus in mice.

Infection has never been established as a cause of diabetes, though cases have been described in man after mumps and in cattle after hoof-and-mouth disease. Drs. John E. Craighead and Mary Frances McLane of the University of Vermont at Burlington report that a variant of encephalomyocarditis virus caused diabetes in experimentally infected mice.

The EMC virus apparently acts on the insulin-secreting islets, reducing the mass of functional cells, they suggest in the Nov. 22 issue of *SCIENCE*. Because the affected cells no longer secreted insulin normally, levels of blood sugar rose markedly, and remained high for periods ranging from a few days to several months after the animals recovered from the virus infection.

CLINICAL CHEMISTRY

Canine hemophilia test developed

A test that predicts with 99 percent accuracy whether or not a female beagle is a hemophilia carrier could be a detector for the same disease in humans.

Hemophilia in dogs is identical to hemophilia in humans, four University of Oklahoma researchers report. It is an inherited disorder in which blood fails to clot normally, leading to excessive bleeding.

As with humans, it is the female who carries the disease, and the male who becomes the bleeder. By examining the blood platelets of normal and bleeder beagles and females capable of transmitting the bleeding tendency, the researchers were able to determine with 99 percent accuracy which animals showed the hemophilia transmitter state.

The investigators were R. G. Bruckner, J. M. Hampton, Robert M. Bird, and William E. Brock.

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