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of much higher voltage, "big ocean swells replacing pool ripples."

"The alteration," Dr. Lennox explained, "probably means that various clusters of cells in the brain are discharging electricity simultaneously and not, as normally, in rapid sequence. An automobile whose six or eight spark plugs 'sparked' simultaneously would not run. Just so the most profound changes in the rhythm of the discharging centers of the brain were attended by unconsciousness.

"This method of graphic recording of electrical brain rhythms may be useful during operations as a means of informing the surgeon of the depth of the anaesthesia.

"The observations also reveal the manner in which anti-epileptic drugs prevent or break up the electrical rhythms associated with the unconsciousness of epileptic seizures."

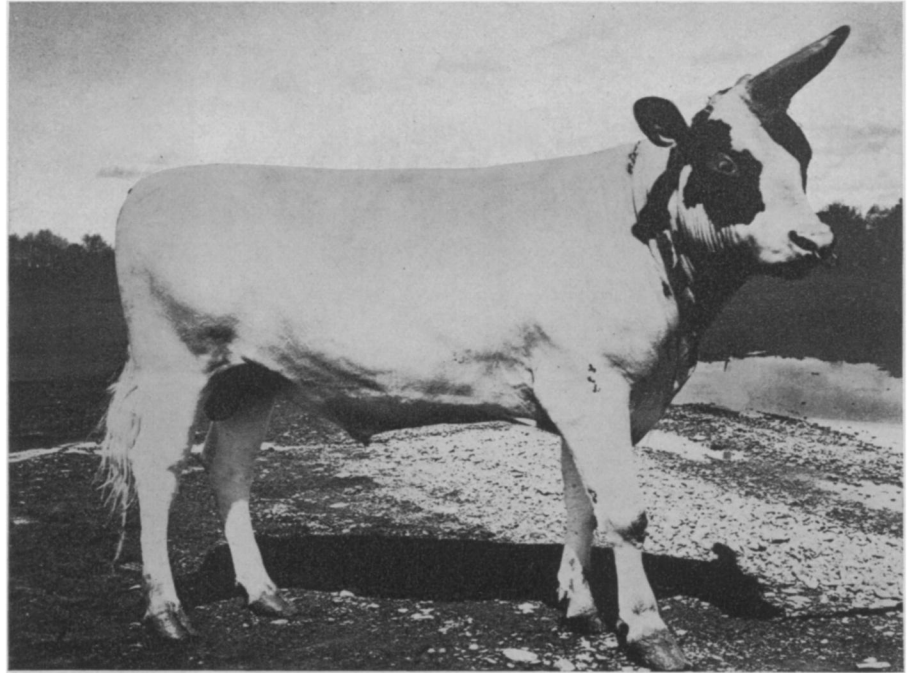
Physicians Hurt Themselves

Deliberately inducing pain in themselves by injuring the skin with irritants and by injecting strong salt solution under the skin, two physicians of the University of Pennsylvania School of Medicine studied the effect of counter-irritants, such as heat and cold, commonly used to relieve pain. Results of the studies, made by Drs. George D. Gammon and Isaac Starr, were reported.

The other two counter-irritants used were electrical and mechanical agents. The effectiveness varied greatly in the two types of pain. Heat, for example, relieved pain from salt injection but increased that due to skin injury. Rhythmically applying and removing the counter-irritant for brief intervals relieved severe pain which constant application of heat or other counter-irritant could not relieve. Periodic electrical stimulation was found a convenient method for doing this. The net result of the counter-irritation, whatever the method of applying it, seemed to depend both on changes of tissue temperature and alteration in the blood supply.

The physicians were also able, by a special technique, to listen in on pain messages from nerves to the brain and spinal cord. These messages were obtained from sensory nerves of anesthetized animals. This method showed the changes in the nerves which occurred in response to counter-irritation and which informed the brain of changes in pain in the injured tissues.

Science News Letter, May 16, 1936



UNDISPUTED LEADER

The unicorn of scientific reality follows in the steps of his mythical forerunner in being a creature of calm assurance, unchallenged power and tolerant disposition.

ZOOLOGY

Unicorn No Longer Fabulous; Biologist Has Produced One

By DR. FRANK THONE

UNICORNS no longer belong wholly in the doubtful twilight of mythology, where dwell griffins, dragons, and such-like fabulous beasts. There is a live unicorn right here in the U. S. A. of this modern year 1936. Nor is he under the suspicion and ban of science; quite the contrary, science is responsible for his existence. (*Scientific Monthly*, May.)

The 1936 model unicorn was produced by Dr. W. Franklin Dove, biologist at the University of Maine, through a rather simple surgical operation on the head of a day-old bull calf. By transplanting both horn buds, or little knots of tissue that normally produce a pair of horns, to a close side-by-side position at the center of the calf's brow-ridge, Dr. Dove induced the growth of a single very massive horn, that has proved to be a most efficient weapon. Indeed, so much more successful has it been than the usual two horns that its proud possessor has undisputed domina-

tion over his companion cattle, and has developed much of the proud yet unaggressive bearing and disposition ascribed to the unicorn of fable.

The operation by which Dr. Dove's bull calf was enabled to become a unicorn was similar to some of the tissue transplantations used in plastic surgery on human beings, to remedy the disfiguring loss of a nose or other facial feature. When the horn buds were cut loose from the young animal's skull, a strip of skin and underlying flesh was left attached to each one, to carry the normal blood supply until the transplanted beginnings of horns could take hold on the spot where he planted them. Also, since the horn buds are circular, Dr. Dove cut their adjacent edges flat, so that he could set them close together, and so encourage the growth of a single horn mass.

The Maine unicorn is now about two and one-half years old, a splendid young animal of the Ayreshire breed. He is strong, fearless, well able to fight though seldom doing so. His biological

"inventor" holds that his marked docility is due largely to the fact that the unicorn knows his own strength and the superiority in combat that his single weapon gives him; full self-confidence has done away with truculence.

Dr. Dove has searched the literature of unicorn lore, which is both ancient and voluminous. He is strongly inclined to believe that earlier peoples anticipated him in his unicorn-making surgery, and that they produced leader animals for their herds in this way. One passage in Pliny, noted naturalist of Roman times, indicates that ancient herdsmen operated on the horn buds to produce multiple-horned beasts. Other more modern references indicate that shepherds in the Himalayan state of Nepal made unicorns of rams, and that two African peoples knew the secret of unicorn cattle.

Everywhere in ancient literature, both Biblical and classic, the unicorn is credited with great strength, great nobility, and great independence. He is always the leader of the beasts. His single horn, tipped with red or black, is the symbol and source of his power. He rules the others with it; he dips it into pools of undrinkable water and takes away the poison. Yet he is gentle, so that he will obey even a young girl. Later legend stressed this point, until it was claimed that only a virgin could tame a unicorn.

The unicorn is mentioned three times in the Old Testament, always in terms of high esteem. Indeed, the first refer-

ence, in the Book of Numbers, likens the unicorn even to God. Balaam, the heathen prophet who ran full tilt into the power of Jehovah, and of course got the worst of it, reported back to his king: "He hath as it were the strength of an unicorn!"

Dr. Dove's own bovine unicorn, and his belief that similar animals were formerly created in numbers as herd leaders, receives apparent Scriptural support in the book of Job. God asks his sick and complaining servant:

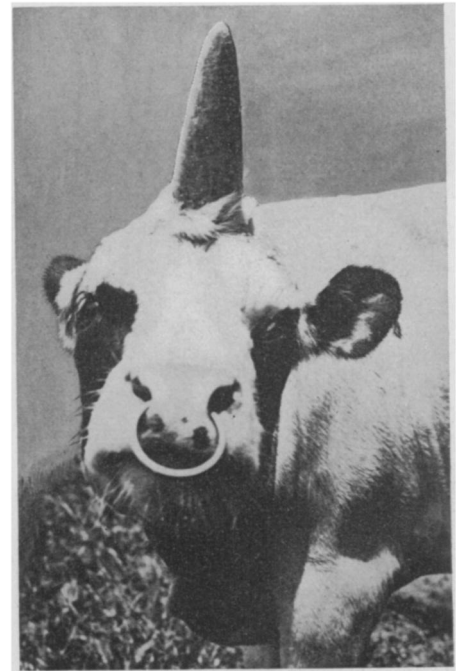
"Canst thou bind the unicorn with his band in the furrow? or will he harrow the valleys after thee? . . .

"Wilt thou believe him, that he will bring home thy seed, and gather it into thy barn?"

Such farm work was ox-work, and not to be demanded of the proud herd leader.

There is another story, not in the Bible but in the Jewish Talmud, about Adam sacrificing a "unicorn" to God. As Dr. Dove interprets this legend, it may well signify that Adam offered up absolutely the most valuable thing that he possessed, the finest sire in his herd.

The strange unicorn of heraldry appears to be a late invention, compounded of several animals, presumably to symbolize his several high nobilities: head, neck, and legs of the horse; hoofs and beard of the goat. The single twisted horn sprouting from the middle of his forehead was rather like that of a straight-horned antelope, or perhaps



NOT MYTHICAL NOW

A scientist has created this true unicorn and lifted this creature of fabulous virtues from the pages of legend into the world of modern reality.

the nose-horn of a narwhal, which is a porpoise-like sea creature.

This creature of the later Middle Ages did not attain his proud position on the English coat-of-arms until the Scottish-born James I put it there. So that "the lion and the unicorn, a-fighting for the crown" have been the property of nursery children only since the time when Shakespeare, a portly, baldish, middle-aged retired playwright, lived out his sunset days in his native Stratford-upon-Avon.

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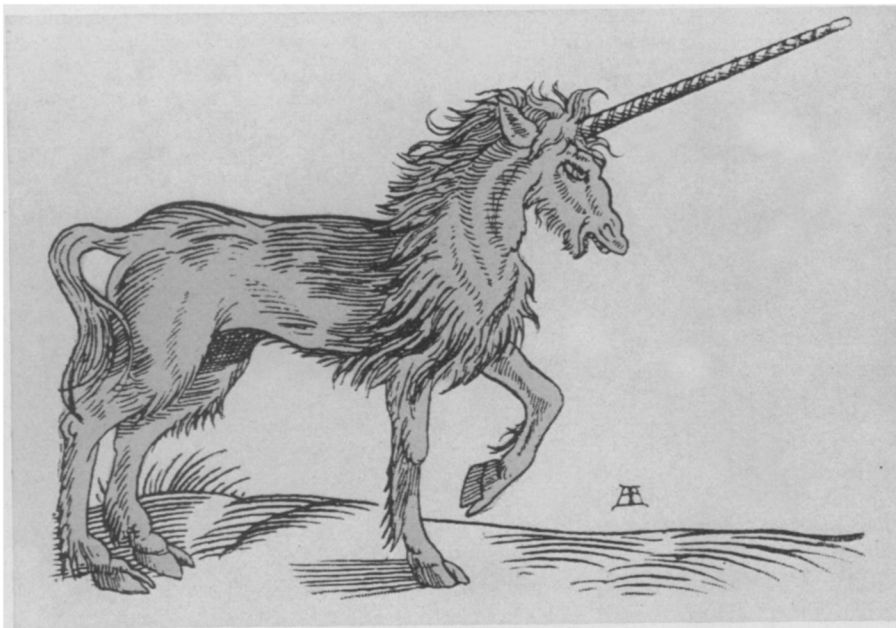
BACTERIOLOGY

Neglected Lowly Plants Source of Soil Wealth

ONE-CELLED green plants of the class known as algae, usually neglected in studies of soil fertility, are an indispensable factor in making the soil productive, is the claim of Prof. Rudolf Gistl, of the Munich Technical School. In certain types of soil, Prof. Gistl says, these lowly plants are the chief source of energy-food for the nitrogen-fixing bacteria that enable profitable crop plants to grow.

Prof. Gistl even envisages the possibility of making sterile soils fertile by inoculating them with proper mixtures of algae and nitrogen-fixing bacteria.

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A MYTHICAL BEAST

The traditional unicorn of heraldry was a composite animal made up of the virtues of several different animals.