

made as cheaply, at present, as natural rubber can be produced, the synthetic rubber products of the duprene type serve as a valuable check to control the price.

During wartime and by means of special cartels rubber has often sold as high as \$1.25 a pound. Now it is said that the cartels dare not raise the price of natural rubber above 20 cents a pound.

Based on America's annual consumption of rubber, it is estimated that 375 million dollars a year is saved due to the difference in the present price of rubber and what it might be if there were no artificial competitor at hand to serve as a check against price-rising.

*Science News Letter, December 29, 1934*

## ZOOLOGY

## German Breeders "Rebuild" Lost Wild Horse Species

**B**REEDING experiments conducted at the Munich Zoological Garden have succeeded in producing a young horse resembling in every respect one of the two extinct horse species that roamed Germany when the country was still a wilderness. (*Die Umschau Dec. 9*).

The Munich animal is a cross between the still-existing brown wild horse of the Siberian steppes and a descendant of the gray "tarpan" of southern Russia, extinct in its pure line since 1879. In both juvenile and adult coat colors and markings the "rebuilt" wild horse is said to be an exact counterpart of its vanished forebears.

At the same zoological park, success is announced in "rebuilding" the aurochs, a species of wild cattle abundant in Europe during ancient and medieval times, but extinct since the seventeenth century.

The results of these breeding experiments are discussed by Dr. H. W. Frickhinger of Berlin.

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### Phenology

**G**ET SET to add another word to your vocabulary: Phenology.

Don't object that it is a "big word." It is no tougher than a lot of other scientific terms that are already part of your unconscious, fluent talking equipment, like distillation, crystallize, nebula, electron and chromosome. The first dozen times are the hardest.

Phenology is a gift of science's partnership with the New Deal. It has nothing to do with phrenology, which is a thoroughly exploded Old Deal word, nor with penology, which has to do with the prison-fate of public enemies under both the New Deal and the Old. Phenology is a convenient word meaning the study of when the flowers bloom in springtime and the fruits get ripe in fall. We have all been informal practitioners of this science all our lives; only we are now to have a handy name for it.

Phenology is given a good deal of attention in the just-published report of the Land-Use Committee of President Roosevelt's Science Advisory Board. It is of especial importance in the rehabilitation of the now depleted grasslands of the West, which must be better managed in future if we are to have beefsteaks to eat and woollen overcoats to wear.

For one of the reasons why the grasslands have been worn dangerously thin is that cattle and sheep have been grazed on them in unscientific disregard of the seasons. If they are eaten down when they are in bloom, or while the seed is still green and unshed, the animals are apt to eat not only this year's pasture but next year's unborn

grass. Their present hunger may bring them future starvation.

Phenology, in the hands of competent practical botanists, can do much to abate this danger. Such scientists will be able to say, for a given region, when the stock may be turned out to graze unrestricted, and when they should be held in the corrals yet a while, to give their dinner a chance to get ripe. They will be able to tell the stockmen when to look out for the ripening of poisonous seeds or the hardening of irritating thorns and prickles on the range-land weeds. They will know which grasses are perennials, not so much dependent on seeds, and which are annuals, which absolutely must be allowed to propagate year by year. They will have the answers to many questions which in the past have cost the livestock industry many millions because men guessed instead of knowing.

Phenology is not a new word. It has been in technical use for a long time, and even now is in popular use in British agricultural publications. It comes from the Greek, meaning the study of appearance—in this case the appearance of the flowers, fruits and seeds.

The same Greek root is in one of our familiar Christmas-season words, Epiphany, the feast commemorating the visit of the Three Wise Men. "Phaeno" in Greek means to show: Epiphany was the "showing" of the Child of Bethlehem to the world at large, as represented by Caspar, Melchior and Balthazar.

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