

But taste is not the whole story, Dr. Young is convinced. He points to an experiment conducted by Dr. M. F. Hausmann. Dr. Hausmann fed rats sugar and, on other days, saccharin. The rats liked both. But there is an interesting difference between saccharin and sugar. Although both taste sweet, only sugar adds calories to the diet. Saccharin passes through the body without nourishing it.

The rats, on days when they were fed sugar, voluntarily decreased the amount of other food they ate to compensate for the increased calories received from the sugar. But on the days when they got saccharin, there was no such reduction in food intake.

In another experiment, Dr. Hausmann gave his rats a cocktail party. The refreshments included food and water as well as the alcoholic drinks. The cocktails for the different rats varied in strength from 2 per cent., which would be equivalent to a pre-repeal beer, to 36 per cent., or as strong as the ordinary drink of whiskey.

The animals, he found, regulated their consumption of the alcoholic beverage, regardless of the strength of the drink, so that they always got the same absolute amount of alcohol.

More than that, they always reduced their food intake to correspond exactly to the amount of calories furnished by the alcohol they had taken.

In addition to the immediate taste of the food or drink on the tongue, the desire for more seems to be regulated by some deep-lying organic need which is dependent upon the chemical condition of the whole body.

Hunger is not a simple single result of an empty stomach, Dr. Young concludes after a careful review not only of his own but all other experiments in this field. He has demonstrated in his experiments at least 10 hungers.

The body may crave protein, fat, carbohydrate, water, oxygen, salt, phosphor-

us, sodium, calcium and the vitamin B complex. Obviously there are countless other cravings, as yet unexplored.

Satiation as to one or a number of these essentials will leave you still hungering for some of the others.

The chemistry of the taste mechanisms of the mouth is involved in such a chemical change in the body. It is through chemistry that your tongue is sensitized by deprivation to enjoy certain special foods just as thirst sensitizes you to water so that your "dry throat" will urge you to drink.

Dr. Young has also observed that when rats are deprived of some one article of diet, such as vitamin B, they become greatly excited and active when this particular substance is offered to them.

Study of the psychology of hunger, opened up by these attacks on the problem, offers an entirely new field for research which may have the utmost importance in connection with this war and with the post-war reconstruction of the world's health.

By watching the behavior of a rat deprived of butter, or of wheat, or of meat, psychologists may find a clue to what may happen to the minds of men so deprived.

Will they have to work under a tension, an unrecognized restlessness and anxiety, until this natural appetite is satisfied? Will it make them more militant, or will it make them inactive? Can other foods supply the psychological as well as the physiological needs ordinarily filled by the lacking articles of diet?

Rats, which have already in recent years played such an important part in solving problems of nutrition, may be expected to aid in an entirely new way in preserving man's mental as well as physical well-being.

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#### PALEONTOLOGY

### Single Jawbone Discloses Existence of Unknown Birds

A SINGLE fossil jawbone of a long-extinct big bird, found recently in Alberta by Dr. Raymond M. Sternberg of Hayes, Kansas, becomes the basis of an entirely new order of birds, the Caenagnathiformes, in a technical revision of the birds of the world just published by Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution. It is placed just below the ostriches in the classification table.

The fossil came out of a bed of dinosaur bones and is itself so primitive that it may be reptilian rather than a bird.

However, Dr. Wetmore accepts it as such pending further information. The age of the deposit was Late Cretaceous, about 100 million years ago.

Another fossil bird family, the Paranyrociidae, belonging to the general class of ducks, geese and swans, is included because of one curious fossil found in South Dakota deposits about 30 million years old.

Fossil records of birds are far less complete than those of reptiles and mammals, Dr. Wetmore states. Vertebrate fossils are formed, as a rule, through the settling down of a dead body in the mud of a marsh, or through covering with volcanic ash during an eruption. This is far less likely to happen to birds than to the heavier-bodied ground-dwelling animals. Smaller birds especially, falling to the ground when they die, are usually either picked up by carrion-eaters or decay as they lie, even their delicate bones becoming shattered and scattered before they can become embedded under conditions suitable for fossilization.

In Dr. Wetmore's revision, the birds of the world are divided into 34 orders, comprising 202 families.

*Science News Letter, November 23, 1940*

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