came through undamaged, though some of the lemon orchards suffered considerably.

One lesson learned from the 1913 freeze and put into effect in 1937 was the danger of undue haste in removal of apparently seriously damaged trees. Give nature a chance and she will repair her own damage to a very remarkable degree. Very few trees of any variety have been sacrificed in 1937.

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"IDEST"

IN reading—rather belatedly, I must admit—your issue of November 5 last, I was interested by Mr. C. H. Briggs's letter on page 423, headed "Idest: A Word for avoiding Ambiguity."

While fully agreeing with the point Mr. Briggs raises as to the unfortunate ambiguity frequently inherent in the use of "or," I do feel that his proposal to add to our unfortunate and overburdened language yet another word can only be justified on the score of dire necessity.

In the present case, I do not think this necessity arises. There is already available an expedient which has, I think, been used for a long time past. This expedient is simply the use of parentheses where the second word is merely an alternative term for the first. For example, instead of writing, as Mr. Briggs suggests, "Turkish idest Aleppo galls," "tannin idest gallotannic acid," "muriatic idest hydrochloric acid," why not simply "Turkish (Aleppo) galls," "Tannin (gallotannic acid)" "muriatic (hydrochloric) acid"?

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THE MANUFACTURE OF KRAFT PULP AND PAPER

IN the account of the exercises in connection with the celebration at Fernandina of "Florida Industries Day" (SCIENCE, January 28, 1938, p. 82) it was stated: "Honor was paid to Dr. Charles H. Herty, by whose research in a small laboratory in Savannah the process of manufacture was discovered." This is an error which has frequently been made in recent weeks, particularly by correspondents of the daily newspapers not familiar with the history of the manufacture of pulp and paper.

In order that the situation may be clarified and justice done to all concerned, I hope that SCIENCE will reproduce the following extract from an address I made at a recent public gathering in Savannah, Georgia, which quotes textually and accurately my remarks bearing on this misunderstanding.

> Too much credit has been given me in an over abundance of good will on the part of many of the daily newspapers. For instance, in its account of the Fernandina celebration about a month ago, the *New York Times* correspondent stated I was the discoverer of the process for making kraft pulp and paper.
>
> This was so plainly an error it was not worth correcting to paper men, but in order that the record may be clear to all, let me say the kraft pulp and paper industry has been in existence in the South for the last twenty-seven years.
>
> The man who was responsible for that development is a man living and working here in Savannah, namely Ed Mayo, who was a pioneer in the field and who struggled with those same difficulties, prejudices and skepticism which we have been going through in trying to start the news-print industry from pine in the Southern States.

CHAS. H. HERTY

REPORTS

PROGRESS OF THE NEW YORK ZOOLOGICAL SOCIETY

THE New York Zoological Society during the year of 1937 made definite strides forward in connection with certain of the activities to which it is dedicated. Before commenting on this progress, it may be said that the collections at both the Zoological Park and the Aquarium are extremely extensive in regard to both interest and number. At the close of the year there were at the park a total of 2,607 specimens, representing 988 species, and at the aquarium a total of 10,804 specimens, representing 480 species.

Among the rare and interesting acquisitions in the park during the past year were the following: The only Okapi that has ever been seen in this country; a pair of Roi Rhebok antelope, Beisa and Saiga antelope; a pair of Muntjacs; a giant armadillo; scarce birds of paradise; a pair of quetzals, which are the first ever exhibited in any zoological collection, and many other unusual specimens.

Among the most interesting acquisitions at the aquarium were a Madeira scorpion fish; a sea-bat; whip-snake eel; Nile puffer; pink wrasse; Chinese river turtles, Chinese alligator; Coecilians from South America; locust lobsters from Madeira; black-banded butterfly fish; black-barred squirrelfish; panther fish; Chinese fresh-water crabs; and many others. For the first time we have been able to discover more successful methods of keeping octopi alive. The difficult technique of maintaining this delicate animal is gradually being acquired.

During the year 2,655,870 persons visited the zoological park and 2,626,893 persons visited the aquarium.

Improved methods of interpreting the many fascinating facts and principles of zoology are gradually being developed, so that the public may come to see

living animals and depart with "living" ideas. The installation of an exhibition depicting the evolution of the lizard to the bird, which has recently been installed in the birdhouse at the park, is a preliminary step in this direction and has aroused wide popular interest.

Our educational services to students have been active, as indicated by the fact that during the past year 900 school classes registered at the park gates, and fourteen high schools and junior high schools availed themselves of the special tours of the park, conducted under the direction of our curator of educational activities. The use of our educational films and lantern slides is steadily being extended, showings having been made to a total of 71,560 students during the year.

The society is determined to develop its scientific activities in every way possible. The hospital and laboratory at the park is not only a place for the technique of keeping our animal population healthy, but it is being developed constantly as a center for biological and pathological research. An important opportunity lies open to the society in this direction. Active collaboration is being carried on at the present time with the following medical and scientific institutions: Mt. Sinai Hospital, New York University, Cornell University, College of Physicians and Surgeons, International Health Division of the Rockefeller Foundation, U. S. Bureau of Fisheries and Yale University. Students from some of these institutions are working daily in our laboratories.

The tropical research department, under the leadership of Dr. William Beebe, has already completed one expedition of five months' protracted study of deep sea life at the Bermuda Oceanographic Station, and is engaged at this writing in another expedition in the Pacific, carrying on the work started during 1936 in collecting data as to marine forms found off the west coast of Southern California and Northern Mexico.

As readers of SCIENCE are undoubtedly aware, the results of the scientific and technical work of our staff are published currently in *Zoologica*.

Definite advancement in the society's activities in the field of conservation is being made. The Wild Life Protection Fund, founded and carried forward until his death by Dr. William T. Hornaday, came under the management of the society in the early part of last year. In December the International Wild Life Protection Committee proposed that its activities be taken over by the society, and this additional work is being assumed. It is apparent therefore that our opportunities in carrying forward effective work in conservation, always an integral part of our activities, are increasing as time goes on.

We mourn the death of our former president, Mr. Madison Grant, which occurred on May 30, 1937. Among all his activities throughout his lifetime, his prime interest was always the Zoological Society—from its founding in 1895 through the years of its development and growth—until the very day of his death.

We regret the retirement of Dr. Charles H. Townsend (on November 2, 1937), who for thirty-five years so successfully conducted the aquarium. However, Dr. Townsend will continue his valuable contributions to the *Bulletin* and to *Zoologica*, as well as continue his study of the distribution of whales throughout the world.

In conclusion, it is apparent that the interest of the public in the wonders of the animal world are perennial and unceasing, of which a visitors list of more than five million persons a year is sufficient evidence. In addition to the administration of the zoological park and the aquarium, and the carrying out of its marine expeditions, the officers, board of trustees and administrative staff of the society are also doing everything in their power, with the means at their disposal, towards enlarging the society's usefulness in the boundless fields of education, scientific research and the conservation of wild life.

FAIRFIELD OSBORN

SPECIAL ARTICLES

THE X PARTICLE

FROM the studies of cosmic ray data physicists had come to the conclusion that the energy in cosmic radiation was carried by an unknown particle, the X particle. In 1936 Anderson and Neddermeyer discovered from an examination of cosmic ray tracks in cloud chambers what they conceived to be this new particle; a particle with the same charge as the electron but with very great penetrating power. Street and Stevenson almost simultaneously announced the detection of the same particle. From their measurements, the latter investigators concluded that it had a mass 130 times that of the normal electron. Corson and Brode[1] estimated from the track that they observed that the mass ratio is nearer to 700 than 130.

When Dirac set forth his relativistic theory of the electron in 1927 he advanced the opinion that there should exist a corresponding particle with a positive charge. The discovery of this particle, the positron, by Anderson from cloud chamber photographs of cosmic ray tracks constituted the major achievement resulting from cosmic ray studies. Since that time

[1] D. R. Corson and R. B. Brode, *Phys. Rev.* (A), 27, Stanford meeting, December, 1937.