

was of separate sexes and that the sexuality of any individual remained unchanged during its entire lifetime. Recent studies, however, have shown that this is not entirely correct, for it has been proved that an individual that has functioned as one sex during one spawning season may assume the opposite sex the next year. But only a small proportion of the adult oyster population shows this change in any one year, the majority of individuals retaining the same type of sexuality for two years or more. And it is not improbable that some—perhaps many—individuals retain the same sex throughout life or, at least, after passing through an initial male phase during their first or second year."

MANY seeds of trees, shrubs and other plants of commercial or ornamental value are wrapped up in coats so highly resistant that it takes months or years for them to germinate. Professor J. Nelson Spaeth, of Cornell University, reported to the Botanical Society that seeds of linden or bass wood did not germinate in two years if left untreated. Chilling them at various temperatures, even as low as that of liquid air, failed to have much effect on their torpidity. But when seeds were treated with concentrated sulfuric acid for from twelve to twenty minutes, they showed 49 to 63 per cent. germination in four months. Florence Flemion, of the Boyce Thompson Institute for Plant Research, experimented with the stubborn seeds of *Rhodotypos*, an ornamental shrub of the rose family. These appear to need a period of "after-ripening" in order to germinate and grow properly. By peeling off the seed coats, she induced a few of them to grow without this after-ripening period, but they developed very slowly, and the young plants have the appearance of being dwarfs.

THE forest of Alaska is marching northward. Its front is made of young trees, none of them over a hundred years old, though a few miles to the rear there are plenty of specimens that can boast three centuries. This and other evidence of advancing tree line in the North was presented before the Ecological Society of America

by Professor Robert F. Griggs, of the George Washington University. His observations in Alaska are supported by similar studies made by other botanists in the Scandinavian countries. Professor Griggs's most striking observations were made at Kodiak, which is now just beyond the timbered area, though old records indicate that areas now heavily forested were treeless a few generations ago. "The trees at the edge of the forest are small and squat, suggesting an adverse climate," he said, "but when examined they were found to be growing as rapidly as the same species a thousand miles within its borders to the southeastward. They are likewise reproducing freely."

THE machine age may starve to death in the near future, victim of to-day's profligate use of metals, coal and oil. In his presidential address before the American Society of Naturalists, Professor Ross Aiken Gortner, of the University of Minnesota, observed that precious, irreplaceable stores of natural resources absolutely essential to modern industrial civilization are disappearing into the maws of industry and dissipated wastefully over the earth. "In the last hundred years this lusty infant, applied science, has increased its food consumption perhaps a thousand fold," he said, "and unfortunately for mankind already the shelves in some of nature's cupboard show signs of exhaustion of specific food supplies." Professor Gortner warns that the coal and oil supplying this energy will be exhausted within the next thousand years. More menacing is the approaching exhaustion of copper, antimony, tin, lead, zinc, chromium, manganese, nickel and iron stored in parts of the earth accessible to man. In the past hundred years the tools of science have wrested from the earth from a tenth to half of the available natural resources. Man has enjoyed them for a moment, then destroyed them or cast them aside in a form useless to coming generations. Water power, alcohol from vegetation and solar energy are totally inadequate to replace oil and coal.

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