tion has been definitely attributed to this tick before the observations reported here. On the other hand, the genus Amblyomma is known to be a vector of spotted fever in Brazil and Colombia. Under these circumstances, the spotted fever of the Gulf Coast would be more closely related epidemiologically to that of South America than to that of the Rocky Mountains.

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ADDITIONAL STEROIDS WITH LUTEOID ACTIVITY

RECENT experiments lead us to believe that contrary to common opinion the progestational type of luteoid activity is detectable in many steroids and is not dependent upon the presence of an α-β unsaturated ketone group at C_3. Bioassays were performed on the immature rabbit according to McPhail[1] with the only modification of using 3 subcutaneous injections of 5 γ of estradiol in 0.1 cc of peanut oil subcutaneously every second day during the period of sensitization.

Since considerable confusion has been created in the literature by the inadequate description of steroids used for pharmacological assays, we shall refer to our compounds by their full systematic names [for terminology see Selye[2]] followed in brackets by their common names—whenever such are in use—and the melting point of our sample. The dosages given represent the total amount administered during the test.

The following steroids proved to possess progestational activity at the dose levels indicated: 17-ethyl-Δ^5-androstene-3(β)-ol-20-one (pregnenolone, M.P. 186°) 10 mg; 17-ethyl-Δ^5-androstene-3(β),21-diol-21 acetate (acetoxy-pregnenolone, M.P. 183–184°) 25 mg; 17-ethyl-Δ^4-androstene-3,11,20-trione-17,20-diol (Kendall's Cpd. "E", M.P. 215–218°(dec.)) 2 mg; 17-butyl-Δ^4-androstene-3,20-dione(21-ethyl progesterone, M.P. 115°) 10 mg; Δ^4-androstene-3,17-dione (M.P. 170°) 25 mg; Δ^5-androstene-3(β),17(α)-diol (androstenediol, M.P. 184–185°) 50 mg.

The following compounds proved to be devoid of progestational activity at the dose level indicated: Δ^5-androstene-3(β)-ol-17-one (dehydro-*iso*-androsterone, M.P. 146°) 50 mg; Δ^4-androstene-3,17-dione-6(α)-ol acetate (M.P. 176°) 4.5 mg; 17-*iso*-heptyl-Δ^5-androstene-3(β)-ol-25-one (27-nor-cholestenolone, M.P. 127–128°) 50 mg; the M.P. 180–182° epimer of Δ^5-17a-methylchrysopregnene-3(β),17a(?)-diol-17-one at 10 mg and its M.P. 275–278° isomerid at 5 mg.

It should be emphasized that the material available did not suffice in each case to perform a sufficient number of assays on a wide range of dosages and that there is considerable individual variation with regard to the sensitivity of rabbits to progestational compounds. Hence the doses at which we detected definite activity should not be regarded as accurate threshold doses suitable for quantitative comparisons, although positive tests are qualitatively conclusive. Pregnenolone and acetoxypregnenolone have been assayed at various dose levels on 20 rabbits so that the threshold dose of 10 mg for the former and 25 mg for the latter may be regarded as fairly accurately established. The fact that they both possess progestational properties indicates that neither the ketone group at C_3 nor the Δ^4-double bond are essential prerequisites for luteoid activity. It will be recalled that both these compounds are also endowed with corticoid activity,[3] but in this respect acetoxypregnenolone is more active. It appears, therefore, that in the Δ^5-3-ol series, as in the Δ^4-3-one series (confront with progesterone and desoxycorticosterone acetate), introduction of a 21-acetoxy group increases the corticoid, but decreases the luteoid potency.

A detailed description of these experiments as well as of the relevant literature will be given at a later date. At this time we merely wish to call attention to the fact that progestational activity is exhibited by many more compounds than has hitherto been suspected.

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THE OCCURRENCE AND SIGNIFICANCE OF MARINE CELLULOSE-DESTROYING FUNGI[1]

IN the course of investigations on the decomposition of wood submerged in sea water the author has recently isolated a series of marine fungi which readily attack wood and other cellulosic plant materials under marine conditions. Extensive data concerning the distribution of these aquatic fungi show that they are of very common occurrence along the North Atlantic coast, with the present known range from Newfoundland to New York Harbor. Further evidence on the

[1] M. K. McPhail, *Jour. Physiol.*, 83: 145, 1934.
[2] Hans Selye, *Rev. Canad. de Biol.*, 1: 577, 1942.
[3] Hans Selye, SCIENCE, 94: 94, 1941.
[1] Preliminary note.

occurrence of these organisms will probably indicate a much more wide-spread distribution in oceanic waters.

Pure cultures of ten species of the marine cellulose-destroying fungi have been obtained from wooden test blocks which had been permanently submerged for six to ten months in the sea. Several other species have been isolated from specimens of decaying piling collected by the author in various Massachusetts harbors. The wooden test blocks as well as valuable data have been supplied through the courtesy of the William F. Clapp Laboratories in Duxbury, Mass. The organisms thus far isolated belong to the Pyrenomycete group of the Ascomycetes and to several groups of the Fungi imperfecti. In certain species the spores and the mode of spore dispersal indicate adaptation to aquatic conditions. In many cases the abundant occurrence of black perithecia on the surface of test blocks and other specimens has facilitated the isolation of pure cultures.

Histological and micro-chemical examination of infected material shows that the fungi bring about a rapid enzymatic hydrolysis of the cellulose in the thick secondary walls of plant fibers. The fungal hyphae penetrate with ease the cell walls of both hard and soft woods as well as those of the various fibers used in cordage. The exposed portions of plant materials attacked by the organisms exhibit a marked deterioration involving loss of cellulose and concomitant reduction in tensile strength.

Extensive studies of these fungi are now in progress to determine their rates of growth on various substrata.

Dr. David H. Linder, of Harvard University, is collaborating with the author in this series of investigations. A joint publication is now in preparation concerned with the morphology, taxonomy and physiology of these organisms.

It is deemed desirable to make a preliminary statement at the present time on the existence of these hitherto unreported marine fungi, owing to their extremely common occurrence and considerable economic significance, particularly in the destruction of cordage and other plant materials exposed to marine conditions.

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TOO HOT FOR THE DINOSAUR!

THE point to the Dinosaurian bird resemblances is that these recur over a long reach of geologic time and never appear assembled in any one type. An allowable inference is that the Dinosaurs in the course of their long deployment made some approach towards warm-bloodedness; while the respiratory function may have varied markedly within the group as time went on. Certainly as the Cretaceous waned a much changed respiratory balance ensued. The photosynthetic oxygen release of the more and more distinctly dicotyledonous forests heralded the mammals and the birds.

Also, the laying down of heavy beds of coal and eras of limestone formation meant that an age-long abundance of aerial carbon dioxide, the breathing stimulus, was no more. There the Dinosaur failed; and in all his later life there is merely discernible a course of resistance to environmental change. Continental planation in later Cretaceous time was marked; but taking climate and the food supply there must have been left over many an "asylum" in which the Dinosaur could have lived on, bar that fatal lack of carbon dioxide. In its presence the Dinosaur had earlier lived through several periods of relative climatic warmth.

Admissibly, "the earth makes its own climates." Thus the surficial internal heat must have tended to lessen as Mesozoic times ended and the emergence of the Andines and the Rockies began. Global temperature was then merely normally warm for the Dinosaur far into northerly latitudes. Though, then, the plus and minus chemistry of respiration led to the end of that stupendous reptilian brood. In its stead arose the mammals and birds.

As between origin and extinction the atmospheric oxygen-carbondioxide ratio becomes a foremost factor. As assumed, a late Cretaceous withdrawal of much carbondioxide would have had a worldwide cooling effect fully balancing warming due to continental planation. Hence the time is here when the animal and plant physiologist and the geologist are much in need of coordinating their studies. For there stand adposed in the Mesozoic the Dinosaurs and the Cycadeoids. Were not the factors of origin and extinction complementary for both?

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THE DIFFUSION OF SCIENCE[1]

THE individual scientist in the vanguard has been able to win to his understanding and eminence only by a lifetime of the most arduous and painstaking thoroughness. He has watched the pernicious social

[1] Excerpt from "The Diffusion of Science" by J. L. Bennett, Chapter III, pp. 51–53. The late Jesse Lee Bennett, of Baltimore, wrote and worked actively in the field of adult education and the diffusion of knowledge. He left a manuscript ten years ago which his mother has just had published by the Johns Hopkins Press, "The Diffusion of Science." This, to me, seems to be a very important book, and from it I have had a short excerpt copied which is so well expressed that I believe that it would be generally helpful to reprint it in the pages of SCIENCE.—JOSEPH L. WHEELER.