Berkeley. Their first-inspection impression at the crucial two-culture site was that a relation of formations of the kind there encountered would ordinarily involve a considerable period, possibly of some thousands of years. It is on this indefinite preliminary reaction that the press statements are based that "Lodi man may be" 15,000 years old. He *may* be, in the sense that the required laboratory tests and further field observations have not yet been completed, and the age is therefore as yet unknown. As an anthropologist, I should be surprised if the soil structure compelled belief in the lapse of a very long time, because after all the two cultures are generically similar.

Similarly as to skeletal mineralization, which seems much greater in the early-period bones. It is notorious that this may proceed at highly variable rates. Moreover, no quantitative determinations are yet available. While this is again a highly promising lead, no reliable findings bearing on age have yet been made from degree of mineralization.

The San Francisco Bay shellmounds, fifty to a hundred miles downstream, probably contain a related problem. Some of them undoubtedly go back to a considerable age. While Schenck has shown that some may not be as old as at first estimated—3,000 to 4,000 years—he has not proved that they are all younger. It is also inherently unlikely that culture stood stockstill during the whole period of accumulation of these large middens. While nearly all the more important shellmounds have now been obliterated, a considerable body of objects and data on them has accumulated at the university during the past 35 years. A beginning has recently been made of analyzing these data by the same method as used by Heizer: recurrent associations of finds. While it is probable that culture change on the Bay has been relatively slow, else differences would long since have obtruded themselves, such sequences as there were should however be determinable, and will then presumably correlate with those established for the Stockton-Sacramento and Santa Barbara areas.

Since my name has been brought into the press reports, it is only fair to state that my connection with the work near Lodi has been wholly advisory, and mainly cautionary. I have not even seen what is regarded as the type site. The first pertinent observations were made by Dawson, the first recognition of a possible culture succession by Schenck. Lillard and his associates have assembled much the largest body of exact archeological data. Heizer has been responsible for the most recent investigations and archeological interpretation. The geomorphologists, soil chemists and physical anthropologists are still to be heard from.

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## A NEW DISTURBANCE OF RED PINE

RED or Norway pine (*Pinus resinosa* Ait.) has been regarded as a particularly suitable species for reforestation in the northeastern and lake states. The susceptibility of the more valuable white pine (*Pinus strobus* L.) to tip weevil and blister rust and the relative freedom of red pine from pests have caused the latter species to be given preference in many cases. The investigations now being carried on by the writer upon an unreported disturbance of red pine indicate that its freedom from disease is more apparent than real in many sections of the northeastern United States.

The external symptoms of the disease were first noticed by James A. Brock, assistant superintendent of the Rochester Municipal Watershed, in a plantation of young red pine in Ontario County, N. Y., during the summer of 1933. Since then the writer has found it or had reports of it throughout most of New York State, Connecticut and two counties in southeastern Pennsylvania. In gross aspect the symptoms resemble some types of insect injury, as the most conspicuous external characters are the extra-seasonal growth of one or more lateral buds in the terminal bud-cluster and the subsequent "forking" of the tree. The extra-seasonal growth of the lateral buds begins in June or July of the year that they are set, and may continue through August in the region of Hemlock Lake, N. Y. One or more buds are formed at the tip of these precocious shoots before growth ceases. The terminal bud of the parent shoot seldom takes part in this extra-seasonal growth and usually elongates at the normal time the following year. Since the abnormal or precocious laterals assume a more vertical position than is normal, the subsequent growth of the terminal bud causes a forked appearance of the tree. In some cases the original terminal may be forced to take the position of a lateral. This phenomenon, although undesirable, *per se* might be of no great consequence were it not for the fact that organic union of the wood usually fails to take place between the forked members during the later growth of the tree. Dissection of a tree, in which forking had occurred, ordinarily showed that the forked branch had failed to unite on its upper surface with the bole of the tree. A resinous pocket or fissure, surrounded by discolored wood, usually occurs at these areas of non-union. Such defects afford an ideal environment for many species of fungi, some of which are known to be parasitic.

Representative plots from approximately 800 acres of red pine, ranging in age from 5 to 25 years, have shown forking in 68 to 94 per cent. of the trees. The affected trees seldom, if ever, remain permanently forked, as the more vigorous member of the fork assumes a completely vertical position after a few years' growth and the other member tends to take the position characteristic of a normal branch. Hence the

presence of the disturbance in a stand of red pine may not be evident to a casual observer until the invasion of parasitic fungi takes place.

Forking has been found on soils varying in pH from 4.5 to 7.5 and ranging in texture from sandy to clay loam. It has been observed in young natural reproduction as well as in plantations and in both mixed and pure stands. Investigations are being carried on in an effort to determine the primary cause and mechanism of forking. The evidence at hand strongly suggests a fungous origin.

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## SELENIUM DEHYDROGENATION OF NAPELLINE

THE recent publication of Lawson and Topps[1] anticipates on one important point results obtained in this laboratory. These authors secured on selenium dehydrogenation of atisine, $C_{22}H_{33}O_2N$, a hydrocarbon $C_{17}H_{16}$, characterized by its picrate $C_{17}H_{16}\cdot C_6H_3O_7N_3$, orange needles, m.p. 129°, and its trinitrobenzene-derivative, yellow needles, m.p. 140°.

We[2] have obtained by selenium dehydrogenation of napelline $C_{22}H_{33}O_3N$ apparently the same hydrocarbon as picrate, orange needles melting at 130° (Found: C, 60 .95; H, 4.59; N, 9.78, 9.57. Calc. $C_{17}H_{16}\cdot C_6H_3O_7N_3$ : C, 61.47; H, 4.23; N, 9.34;) The trinitrobenzenederivative crystallizes in dark yellow needles and melts at 138°.

Lawson suggested that the hydrocarbon is a substituted phenanthrene. Blount[3] has obtained a compound cevanthrol, $C_{17}H_{16}O$, by dehydrogenation of cevine, a veratridine derivative; x-ray measurements indicate the probability that cevanthrol is an alkyl phenanthrol. It is of especial interest to note that similarity of these reports, because a link between the aconitine and veratrine alkaloids is highly desirable.

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## LUTHER BURBANK

To this writer it has seemed that it is high time some one told the truth about Luther Burbank. I believe I have read every report about him of any importance that has ever been published, but they mostly consist of fairy tales, sentimental rot and propaganda. Some have tried to relate facts but let their emotions get the better of them. Others were frankly hostile, and therefore biased. Exceptions to the above, of course, are the limited writings of Hugo de Fries, Vernon Kellogg, David Starr Jordan and L. H. Bailey.

I have undertaken the task of ferreting out the facts about this man, whose name (no matter what we may think of him) is almost a household word in many languages.

I find it necessary to see all the catalogues and price lists he ever issued in order that I may abstract them and evaluate all the items. I have searched libraries and private collections from coast to coast and have succeeded in finding more than a hundred pieces, but I am sure there are many more still lost. Private collections are my best bet and I, therefore, appeal to readers of SCIENCE to send me anything they may have among their old papers. If requested to do so I will gladly return them.

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# SCIENTIFIC BOOKS

*The World Around Us. A Modern Guide to Physics.* By PAUL KARLSON. 293 pages, 8 plates. New York: Simon and Schuster, 1936. $3.00.

THE rapid development of physics in the past few decades has stimulated the interest of the layman in this subject, and has created a demand for articles and books explaining in everyday language the achievements in physics to the general reading public. To appreciate these achievements it is necessary to know something more about physics in general, and that is exactly what Karlson realizes. The first chapters are devoted to the question of "matter and motion," electricity and light waves. The next chapter deals with the conceptions of relativity, and in the last two chapters he treats the topics of light quanta and the new ideas which have been introduced in the development of the quantum theory. The Bohr atom, waves of matter, artificial disintegration, the uncertainty principle and causality and probability are discussed, and with an outlook on the new picture of the universe the book closes.

The usual objections against writings of this type by the educated non-scientist are, that the arguments are not formulated precisely enough, and that the analogies necessary, to obviate mathematical formulae, are too far fetched. It is particularly important, for a book of this type, to use the same terminology as the

[1] *Jour. Chem. Soc.*, 1640, 1937.
[2] *Jour. Am. Chem. Soc.*, in press.
[3] *Jour. Chem. Soc.*, 414, 1936.