

whether he used the cold process with NaOH or the boiling process with soda. Such a plant would necessarily be of considerable size since straw is light and considerable quantities of liquid (eight times the weight of the straw) must be used. Besides the treatment, the processed straw must be washed to remove the alkali. All of this involves labor and increases the cost of the process. Besides it seems probable that in America it will always be possible to grow corn or sorghum for feed much more cheaply than to process straw even if the latter were wholly a waste material, which is not the case.

Without doubt the attention of experiment stations should be and probably has been called to this process but it seems unwise even to suggest it to the average farmer.

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DOES THE BIBLE TEACH EVOLUTION?

THE creation of man according to the story in Genesis is placed by chronologists at about 4004 B.C. The acceptance of this date or indeed of any variation from it that has been suggested carries the imperative implication that all existing types of man—white, yellow, red, brown and black—Englishman, Japanese, Malay and Negrito—have all descended from Adam and Eve. It matters not what anthropological characters may be assumed for Adam and Eve, the diversity of their supposed progeny illustrates what the biologist means by evolution. The Biblical story with its logical implications stamps every believer in it as an evolutionist. However, no serious scientific man will admit for a moment that human evolution has proceeded as rapidly as the story in Genesis necessarily supports. Viewed from the evolutionist's standpoint, the theory involved in the Biblical story makes Darwin's ideas seem exceedingly conservative. Really Mr. Bryan ought to attack Darwin as a hide-bound reactionary whose notions regarding the slow rate of modification in species seriously challenges the truth of evolution as taught by the Bible.

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SCIENTIFIC BOOKS

A History of the Whale Fisheries, from the Basque Fisheries of the Tenth Century to the Hunting of the Finer Whale at the Present Date. By J. T. Jenkins, D.Sc., Ph.D. London, H. F. and G. Witherby, 326 High Holborn, W. C., 1921. 336 pages, with reproductions from photographs and old engravings.

In the preface to this book, the author tells us that no attempt has hitherto been made to give within a brief compass a detailed history of the whale fisheries: to the best of our knowledge and belief, this statement is in the main correct and the volume under consideration may be looked upon as an effort to remedy this lack of information. Parts of the story have, it is true, been told, and told very well, particularly that relating to the United States, and these Mr. Jenkins has passed over somewhat lightly, devoting much time and care to bringing together and making available for the reader who knows only English the story of the early days of the fishery and especially the important part played by the Dutch who, having practically dispossessed the English, for more than a century successfully prosecuted the chase of the whale about Spitzbergen or, as it was constantly called, Greenland. At the height of this fishery, the decade from 1680-89, nearly 2,000 vessels sailed to Spitzbergen—1,966, to be exact—and the catch of whales was 9,487, but from that time, with certain spurts, the industry gradually declined, coming to an end about 1800.

Mr. Jenkins has been at great pains to give us the details of this whaling, the size of the vessels—often much larger than the average American whaler of the fifties—their crews, equipment, even provisions and the manner of capture and trying out. All of this is interesting and important, to most of us it is new, and for this information we are most grateful. In one detailed list of equipment is noted "150 hogsheads of cider and four tunnes of wines, eight kintals of bacon and six hogsheads of beefe," proportions that might have met with the approval of Falstaff.

One point is surprising—the comparatively

small number of whales taken per vessel, the average being about three and seldom as many as five. To give an idea of the intensive, not to say destructive, methods of modern whaling, it may be noted that the day's catch of a steam whaler is often as great as the season's catch of these early days.

There were, however, some exceptionally "fat" years when the number ran up to ten or twenty whales per vessel, which possibly means better weather and better ice conditions.

The English in their first attempts did little better and it is small wonder that later on the Americans attained preeminence in their field, though they in turn failed sadly to realize the possibilities of modern steam whaling and the industry fell into the hands of the Norwegians. As practically the same weapons and methods were used by the Americans as by their predecessors and competitors, it would seem as if this success might justly be ascribed to the greater energy in the pursuit of whales.

The Americans seem to have had an inborn contempt for the use of any gun harpoon, for while it was employed by the English as early as 1780 in the capture of the Bowhead, it was never adopted by the Americans and it took a visit to South Georgia to convince the modern New Bedford whalers that the Norwegian whaling methods were really any improvement over their own. For that matter, even the English did not adopt their own gun harpoon until well along in the nineteenth century.

The English and Dutch did not have an entirely happy time owing to troubles with one another and with the French, and if a whaler secured a cargo of oil, it was by no means certain that he would reach home with it. In those days the line between privateering and piracy was none too sharply drawn and often the only rule followed was

That they should take who have the power,
And they should keep who can.

Spanish and French, Dutch and English, with some participation by Danes and Germans, Americans and Norwegians, each in turn led in the whale fishery and each has played, or is playing, an important part in the slaughter of the whale, and Mr. Jenkins tells us of them all.

The book opens with a chapter on Whales and their Classification, their habits and haunts, which is followed by one on the Economics of Whaling, including under this head the methods employed, utilization of products and the possibility of conservation. In discussing the measures that have been proposed or taken to preserve the whales, Mr. Jenkins seems inclined to give some credence to the argument of the whalers that the industry will in a way regulate itself, that long before whales can be exterminated, their capture—on account of lessened numbers—will cease to be profitable. This, as shown by experience in other "fisheries" and even by the collapse of Newfoundland whaling after a few years of prosperity, is a fallacy, as is the statement made in connection with the Natal whaling, and often used with all manner of statistics, that there is a tendency for the whales to abandon the coast altogether. Altogether is quite correct; as in the case of seals and walruses, the abandonment is due to the fact that the whales have been killed off and put beyond all hope of return. To illustrate, it may be said that Right Whales were formerly common off the eastern end of Long Island but that during the past decade only two have been seen and these fortunately escaped.

While steel and the automobile have temporarily stayed the extermination of the Bowhead since his "bone" is no longer in demand for whips and corsets, the species increases but slowly at the best and some new demand may blot the species out of existence.

So we subscribe most heartily to a previous statement, on page 47, that "in no case has the cessation of whaling taken place sufficiently soon to render possible the recovery of the whales to any appreciable extent."

About the only real protection that has been given whales is the prohibition, by the Norwegian government, of whaling in some localities and the establishment of close seasons in others. This has been done in response to the protests of fishermen whose reasons are set forth in the Last Phase of Whaling.

There is an occasional little slip here and there, as where it is said a superior kind of oil was found in the head of the Sperm Whale,

which might lead a careless reader to think that this was the sole source of Sperm Oil, even though in dealing with the Sperm Whale fishery it is apparent that this is not the case. Another statement capable of misinterpretation is that the "entire Arctic fleet was destroyed by pack ice in 1871," which happily was not the case, as, while 34 ships were crushed in the ice, seven vessels were left which brought home the crews without the loss of a single life.

In the very useful bibliography, we miss, among some others, any reference to Starbuck's "History of the American Whale Fishery" with its wealth of information and detailed lists of vessels and their catch. That the "Speckshioner" and his duties are not defined nor his title mentioned in the index is possibly a personal grievance due to "satiable curiosity" aroused by Kipling.

But these are trivial matters; destructive criticism is the easiest thing in the world, and to point out all the good things in the book would be to write another. Jenkins' "History of the Whale Fishery" is simply indispensable to any one interested in the subject of whaling, and in these days, when information in regard to the early days of the industry is eagerly sought for, and paintings, models and relics of the old whale ships bring surprisingly large prices, this book should be most welcome.

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SPECIAL ARTICLES

BACTERIAL PUSTULE OF SOY BEAN

EVER since 1904¹ there have been scattering references in phytopathological literature to a bacterial leaf spot or bacterial blight of soy bean, due, it was assumed, to *Bacterium phaseoli* Erw. Sm., but there has been no publication of any experimental proof of this theory. In 1917 Johnson and Coerper² pub-

lished a note on a bacterial blight of soy bean caused by a white organism which in a later paper by Miss Coerper³ was named *Bact. glycineum*. Since then Wolf⁴,⁵ and Shunk⁵ have described a bacterial leaf spot caused by an organism which the former has named *Bacterium sojae*, but which is very similar to if not identical with *Bact. glycineum* Coerper.

Since the publication of these papers there have been an increasing number of references in the literature, including the reports of the plant disease survey of the U. S. Department of Agriculture, to "bacterial blight" or "bacterial leaf spot" of soy bean without any mention of the causal organism, due to the assumption, presumably, that there is but one disease and that due to *Bact. glycineum* Coerper.

In 1917 the writer isolated from soy bean leaves from Texas a yellow organism very closely resembling *Bact. phaseoli* Erw. Sm. With pure culture inoculation with this organism infection has been repeatedly produced both on soy beans and several varieties of garden beans belonging to the genus *Phaseolus*. From these artificial infections the same yellow organism has been re-isolated and with it infections have been produced on sound plants. The infections on *Phaseolus* when made in favorable circumstances are not to be distinguished from those caused by *Bact. phaseoli* isolated from *Phaseolus*, but, except under very abnormal conditions to be described in a paper in preparation, no infections have ever been obtained on soy-bean with the latter organism, although repeated attempts have been made. Furthermore, there are certain internal markings very commonly though not universally present in the colonies of the soy-bean strain of the organism which have been observed in only two colonies of the many thousands isolated from *Phaseolus*. The markings

³ Coerper, Florence M.: "Bacterial Blight of Soy Bean," *Jour. Agr. Res.*, XVIII, No. 4, pp. 179-193, 1919.

⁴ Wolf, F. A.: "Bacterial Blight of Soy Bean," *Phytopathology*, X, No. 3, pp. 119-132, 1920.

⁵ Shunk, I. V., and Wolf, F. A.: "Further Studies on Bacterial Blight of Soy Bean," *Phytopathology*, XI, No. 1, pp. 18-24, 1921.

¹ Smith, Erwin F.: "Bacterial Leaf-spot Diseases," *SCIENCE*, N. S., XIX, No. 480, pp. 416-418, 1904.

² Johnson, A. G., and Coerper, Florence M.: "A Bacterial Blight of Soy Bean" (abstract), *Phytopathology*, VII, 65, 1917.