campestris and *Raphanus sativus*—in these three species the autotetraploid and the diploid branches of colchicine-produced diploid-tetraploid sectorial chimeras have always both been self-incompatible. It was also possible in these cases to show that one was dealing with normal self-incompatibility and not with some disturbance produced by the colchicine treatment, since seeds could be obtained from both the diploid and autotetraploid branches by either bud pollination or the stigma-shaving method of Sears[2]. Lewis has also found that autotetraploid branches of *Œnothera organensis* are self-incompatible like the diploid.

The above Brassica results do not in any way invalidate Lewis and Modlibowska's suggestion that in pears S_1S_2 pollen can grow down $S_1S_1S_2S_2$ styles, since the mechanism of self-incompatibility in Brassica is different from that in pears. In Brassica, as is shown by the stigma-shaving method, self-incompatibility is due to the outer layers of the stigma while in pears it is due to the slow growth of pollen-tubes inside the style.

Brassica chinensis autotetraploids behave in the same way as those of *B. campestris* except that *B. chinensis* shows cyclic compatibility[3]. In *B. oleracea* both self-compatible and self-incompatible plants occur in the diploid[4] and both types have also been found in the autotetraploids.

It would also be interesting to know whether amphidiploids from a cross between two self-incompatible diploid Brassica species would be self-compatible since the three allotetraploid species, *B. Napus*, *B. carinata* and *B. juncea*, are self-compatible. The following two results suggest that they might be self-compatible. No self-incompatible plants have been found in the Cambridge *Raphanus sativus* × *Brassica oleracea* amphidiploids although these plants have been selfed for three generations[5,6]. It is not, however, known whether the two original parents were self-incompatible, but on the other hand, Kakizaki[4] was unable to obtain *Brassica oleracea* plants which would breed true for self-compatibility. Also amphidiploids from the cross self-incompatible *B. chinensis* × self-compatible *B. carinata* are self-compatible[7].

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Feb. 21.

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Search for Petroleum in Australia

MY attention has been directed by Mr. Frederick Chapman to Mr. H. B. Milner's review which appeared in NATURE of January 4, 1941, p. 13. Certain aspects of the Lakes Entrance field were obviously not available to Mr. Milner at the time. His reference to emulsified oil is now known to have no relevance—natural unemulsified oil exists throughout the glauconite (the reservoir rock); when this oil is baled or where it has risen to or near the surface, there is no emulsion. The emulsion only occurs where water has been allowed to enter the wells and when pumping is resorted to. Under those conditions, due to the churning action of the pump used, an oil-in-water emulsion occurs.

Then again, Mr. Milner, in quoting from Government reports, says the trouble with Lakes Entrance is that there is no natural pressure to cause oil to flow in the wells when the sands are penetrated. Actually (*vide* Ranney-Fairbank report on tests of Imray Well made in the presence of Dr. Raggatt, geological adviser, Commonwealth Government, and State Mines Departmental officers), the position is as follows:

"However, in the Imray Well, which was drilled only 21 feet into the glauconite, the fluid has been rising for 695 days; the rate of rise at first was 5 feet (5·4 gallons) per day, total height of the column in the hole was 1,164 feet and the top of the column stood at 110 feet from the surface. The column was still rising on July 13th this year. The fluid column consisted of 173 feet of water and 991 feet of oil (1,100 gallons by measurement in tanks). It appears, therefore, that the fluid produced was approximately 85 per cent oil. Because of the fact that the fluid rose in the well to the height attained and would undoubtedly have risen, in time, to about 100 feet above sea level, it is indicated that instead of being termed a 'low pressure' field, Lakes Entrance might more properly be called a low permeability field. From these observations it is indicated that there is a possibility that the hydrostatic head existing below the oil sand can be turned to advantage in proper operation of horizontal wells into a natural water drive, to flush the oil into the wells."

The summarized information in the Ranney-Fairbank report furnished to the Commonwealth Government is that the oil content of these sands at Lakes Entrance is approximately 400 barrels per acre foot, or 11,600 barrels per acre; a 25 per cent recovery at least is expected.

Messrs. Avery and Anderson, in a review of information gained from Victorian Mines Department reports, show that 1 per cent by weight oil content of the glauconite would provide 4·55 gallons per cubic yard.

The summarized position is that recent carefully checked information has enabled a better knowledge and application of the field to be gained, Sir Edmund Teale's views, appearing in the same issue of NATURE (p. 31) being strongly supported by these later investigations.

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WHILE it is gratifying to learn these results, even so, the fact that we are dealing with an oil-water fluid and a rise of only 5 ft. per day does not indicate to me, at all events, that this is a normal crude oil or that there is a substantial hydrostatic head below it in the "glauconite" (oil horizon). Without all the current facts it is difficult to assess the real position in this field, but at least it is to be hoped that, whether developed by standard methods or otherwise, some good use may be made of what oil is ultimately won, even if no petrol or light distillates can be refined from it.

H. B. MILNER.