The Animal Sciences building at the University of Illinois in which the laboratories devoted to fat and oil technology are located.

the Hormel Institute, is an associate professor in the medical school's department of physiological chemistry. Dr. Holman supervises research both in Austin and the Twin Cities, not only in the field of lipid metabolism, but also on the chemistry of fats and oils. He has published about 50 papers dealing with the chemistry and biochemistry of fatty acids and lipoxidase.

University of Wisconsin. H. A. Schuette, professor of chemistry, has supervised the training in fat and oil technology at both the undergraduate and graduate level. He has given a lecture and laboratory course in fat chemistry, has published some 60 papers on this subject, and has supervised the thesis work for 30 Ph.D. candidates. Dr. Schuette has been most interested in the chemical aspects of fats and oils chemistry. His work has included the characterization of fats and oils, waxes, and the physical constants of fatty acids.

A student working for an advanced degree under Dr. Schuette fulfills the requirements for a major in the department of chemistry and usually takes a minor in organic chemistry or agricultural biochemistry. The latter department has furnished strong support to this program and is justly famous for its many studies on the biochemical and nutritional phases of fats and oils.

Summary

A survey of 39 colleges and universities in the United States indicated that five universities offered formal course work or seminars and research training in fat and oil technology. These five institutions were Ohio State University, Purdue University, the University of Illinois, the University of Minnesota, and the University of Wisconsin.

Letter to the editor

Iodine Values of Acidulated Coconut Oil Soapstock

THE J.A.O.C.S. for June 1953 contains an article of great interest to refiners of coconut oil: "Iodine Values of Acidulated Coconut Oil Soapstock," by S. R. Kuber and Wales H. Newby.

The comparatively high iodine values of this acidulated soapstock have for decades been the basis for arguments or even litigation between buyer and seller, and a clarification is needed.

Copra is a heterogeneous product, widely varying in free fatty acid content of the individual pieces within the same cargo. While pieces of white, sound endosperm may contain oil with only 1-2% FFA, the yellow and brown pieces may contain oil with 10% FFA, and spoiled pieces may even run considerably higher. There may also be minor differences in the saponification and iodine values as well as melting points.

Evidently the heterogeneity of copra may be due to many circumstances: varying ripeness of nuts, exposure during drying and storage, time of storage before and after shipping, conditions during shipping and general handling.

It is obvious that much more of the oil pressed from pieces of poor quality than of that from sound pieces goes into the soapstock during the alkali refining, but this *per se* does not explain the high iodine values of the acidulated soapstock.

The main contributory factor to these higher iodine values is to be found in the "dust" and other small particles invariably present in any shipment of copra. This dust, if removed from the copra by screening, sifting, or blowing, is found to contain oil which may have up to 50% FFA. The amount of dust may constitute 1.5%, or even more, of the total weight of copra and the oil derived from it about 0.95%. Assuming a yield of 64.5% of oil from copra, it is seen that the dust-oil may amount to almost 1.5% of the yield.

The dust is comparatively low in fat and protein. Due to its physical nature it does not respond well to hydraulic pressing, and the cakes are found to contain 11-12% fat and may have up to 25% ash. The expressed oil, as stated, may contain up to 50% FFA. It is dark and smelly and, when originating from smoke-dried copra, has a fluorescence. Its iodine value may be as high as 25, and it would be higher if the dust did not also contain particles of the endosperm.

The content of dust in copra is due to the disintegration caused by insects and molds in combination with the abrasion from handling during drying, shipping, and storage. Like other finely divided material from oil-bearing seed, it deteriorates rapidly under hydrolysis of the oil. The high iodine value of the oil is mainly due to the content of seed-coat (testa) in the dust. Testa oil may have an iodine value of over 50. Since most pieces of copra are curved toward the endosperm, it is obvious that the testa is particularly exposed to abrasion during handling, but, of course, most of the testa remains on the copra as this enters the crushing equipment so that the crude oil actually contains much more of the testa oil than that originating from the dust. It is also realized that the above mentioned 1.5% dust removed by sifting does not represent a complete removal.

In view of the above it is quite understandable that acidulated soapstock has a high iodine value as compared with that of the refined oil and that the latter is lower than the crude. It also explains why the differences between refined and acidulated are greatest with low-acid crude where the amount of soapstock is comparatively small, and therefore the content of dust-oil in the acidulated is proportionally greater.

J. JAKOBSEN
Palo Alto, Calif.
June 17, 1953