Solvent Extractions— The New and Better Way

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WHENEVER we hear about how laws were passed keeping gin houses away from towns and villages, and how laws were passed to prevent cottonseed being thrown into the water courses, we feel like patting ourselves on the back to think how much we have done to extract valuable oil from the once despised cottonseed and how we obtain cattle food and rayon from what is left.

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Some of us remember the time when most of the oil went into the soap kettles or was burned in miners' lamps, especially in off oil years. We do not have to go back much over forty years to find that the oil used for lard compounds was used sparingly, and did not improve the compounds a little bit. Now thanks to the work of the chemist, our vegetable shortenings consist entirely of cottonseed oil and are, in most respects, better than the animal product.

In converting the crude oil into refined, we have a process which is 96.5% efficient. Not perfection by any means but much better than the efficiency of press-room work, which obtains on the average only about 84.5% of the total crude oil in the seed and converts the balance into cattle food and fertilizer, overlooking the fact that the protein of the seed, properly prepared, can be made into a valuable food for the human race.

At the present time the oil in the seed is worth about 10 cents per pound, when refined. The cheapest vegetable protein in a concentration of 20% is that of beans, which is worth at 10 cents per pound for beans about 45 cents per pound. Cottonseed containing 17% protein would carry 340 pounds per ton and be worth on the basis of bean protein $153.00 per ton. As a matter of fact, cottonseed protein has a higher biologic value and should be worth more, several times as much in fact. To utilize this protein is plainly the work of the chemist and the chemical engineer.

We all know that by the proper application of solvents 50 to 55 pounds more crude oil per ton of seed can be made available. We also know that the gossypol and gums can be removed from the meats at the same time. It is also known that with proper handling the crude oil obtained by extraction can be refined and bleached as well or better than that obtained by pressing. With purified solvents the flavor of the extracted oil can be made equal to the pressed oil. With suitable apparatus the solvent losses should cost not far from press cloth under present methods, and the labor should be much less.

In Europe, solvent extraction plants are fast superseding the press rooms for soya beans, copra, palm-kernel and other oil bearing materials. In this country they are used for taking the grease from garbage, cracklings, linseed and other substances.

Solvents have not been used on cottonseed in the past because with improper methods and lack of knowledge of the fundamental requirements of operation it has been impossible to obtain refinable oils. Recent experiments show that these difficulties can be overcome, and with suitable separation machinery it is possible to prepare a meal running from 60 to 65 per cent protein.

Shall we, as chemists, bring about these results or follow the example of the Irishman who when told to clean and open some oysters served the shells and told the boss that he had cleaned them entirely.