realization. The demand for each is increasing and will continue to increase.

Oil consumers are often embarrassed by the acts of some legislators who would put prohibitive tariffs on the importation of fats and oils. I believe there has never been a sound basis for such excessive rates nor that there has been a need for it or even a general demand therefor from our producers. The origin of such moves is generally with the legislators themselves who think they see in it a bait to catch more votes.

I would like to see American produced oils so well refined and so superior in quality that there would be a large export demand for them. This is true to some extent now. We should have no prohibitive or even excessive fat or oil duties.

If crude foreign oils can be brought in free, or at low rates, American chemists and American industry can benefit by it. Our chemists and our refineries would then be doing some of the extra business that now goes to foreign countries, our American soap factories would have less trouble in getting their supplies and the public would benefit by cheaper soap.

The oil and fat industry is a multiphase one and no one can do more than touch on a few of these phases in a short talk. I have merely aimed to point out a few of the more important relations that exist in the industry.

Progress in Cotton Oil Milling

A Discussion of Advanced Practice in America's Largest Vegetable Oil Industry

BY ALAN PORTER LEE

JANUARY 1, 1928, will see the cottonseed oil mills of this country well advanced in the season's crush, and the Christmas season is a good time for the miller to take a "breathing spell," and review his situation.

Due to the comparatively short cotton crop this season, we have seen a repetition of that old evil, competitive bidding and overbidding for seed on the part of mill owners or managers, apparently based on the theory of keeping each mill running at any cost.

When the price of oil and meal fails to pay even the cash expended for seed, without considering the operating and interest charges of the mill, there is only one inevitable outcome, the suspension of those mills which lack the needed financial reserve for the absorption of the season's losses.

These conditions are causing more and more mill managers to awaken to the fact that their only salvation lies in sane seed-buying and in the reduction of operating costs in the mill, as interest charges are fixed, and selling costs already so low that they may be considered at an irreducible minimum.

Wages cannot be expected to take any material decline and are more likely to go the other way as the continuing industrial development of the South increases the demand for labor.

The harassed cottonseed oil miller, then must turn to his manufacturing methods as the only source of reductions in his cost of doing business.

He need look no further, for it is safe to say that those mills which are really abreast of the times in modern material handling and processing methods are few and far between.

In most mills on the contrary, there is room for definite savings in every department, from the unloading of seed to the loading of oil in the tank car.

How many mills take their seed from the farmer's wagon or from the box-car by means of a modern pneumatic conveying system instead of with shovels and wheelbarrows or bucket conveyors? The pneumatic conveyor will do the work in half the time at half the power cost of other conveyor systems.

It does not matter whether it is the farmer's time and labor used to unload his seed or not. He will be paid for it in the price of seed, even if he or his farmhand only spends the time sitting in the shade waiting for the wagon to be unloaded, and the seed will always go to the mill with the best unloading facilities, other things being equal.

Having arrived at the mill and been unloaded the seed must be stored.

Careful Seed-Handling Important

How many mills are equipped to properly cool and dry their seed before storing it?

The annual loss to the cottonseed oil millers of this country through the production of off quality oil because of deterioration of seed in storage undoubtedly totals several hundred thousand dollars.

Drying and cooling systems are *not* expensive when the economy of their use is considered.

Now let us step into the linter room. Is it a modern one, with each linter motor-driven, with the seed brought in pneumatically and the lint gathered from each machine and transported to the bailer in the same modern way; or is it an archaic jumble of pulleys, shafting and belting with the air so full of lint that we don't dare stay long if we want to keep on breathing? That lint in the air weighs something and thus a good many pounds of linters are lost in a season. Are there good saw-sharpening machines and are they used regularly, so that the grades of linters produced are uniform and command the best prices?

Good housekeeping in every department of a mill *will* pay dividends. In the separating department are huller-knives sharp, and the screens efficient? Does this mill send regular samples to a capable chemist to test separation efficiency or does the superintendent just guess it is all right? Weekly samples are not sufficient check, a sample from each shift-run should be analyzed promptly so that any inefficiency in separation may be detected quickly. We must concede that most mills follow this practice at present. Is the roll-grinding to uniform mesh? If not, the oil left in the cake will be high.

This brings us to the cookers. The proper cooking of seed is an art which can be standardized by the application of recording thermometers and temperature control apparatus to the cookers. Given these aids to operation, one man can handle much more work than formerly and still obtain efficient results in pressing.

Press-Room Practice

It is unthinkable to believe that any press-room is operated today without automatic cake-former, accumulator or automatic change-

valves, but a census of mills would probably reveal some without one or more of these essentials to economic operation. It behooves the progressive cottonseed miller to give serious consideration to the problem of press-loading and discharge, which are the operations accounting for most of the press-room labor.

If the crushers themselves create a demand for mechanical equipment to lighten the burden of this labor, our wide awake press-room machinery manufacturers will certainly provide such equipment.

Press-cloth expense can be kept at a minimum only by strict attention to careful forming of loads, uniformity of pressure and rigid inspection and repair of press-cloths and presses.

Cake-trimming must be well regulated, for it is just as expensive to trim too deep and thus rework stock unnecessarily as it is not to trim at all.

Now let's consider the best cake produced in the most modern mills. After exercising the greatest care possible throughout their mills as outlined above the best crushers in the country are selling cake or meal at thirty to forty dollars a ton which contains anywhere from five to seven percent of oil worth about one hundred and eighty dollars a ton.

When the oil is extracted from the cake by means of a volatile solvent the resulting nineteen hundred pounds of cake is worth just as much as the original ton because of increased protein value after extraction.

We are informed from the most reliable sources that the cost of operating an extraction plant including power, labor and fixed charges will not exceed $4.50 per ton on a twenty-five ton plant. Here is a profit of $4.50 a ton of cake for every oil miller, over $100 a day for a four press mill. European crushers take this profit and in the competitive struggle American crushers will be forced to eventually. WHY NOT NOW?

Quality of Oil

And now we come to consideration of the primary, most valuable product of the mill; the oil, the very reason for the mill's existence.

Our most advanced and progressive millers spend much time and effort and many dollars to perfect their seed handling and separating apparatus and methods in order to increase the yield and quality of oil, then, when they have succeeded in winning this, their primary product, from nature's storehouse, let it stand in the tanks in contact with meal, gummy and resinous matters which act as ferments, causing the quality to deteriorate steadily and rapidly.

Under the trading rules this practice costs the crusher many good dollars which he can easily put in his pocket by the installation of inexpensive equipment for the filtration of his oil. Since the passage of the new oil settlement rule this journal has repeatedly shown in its columns the profits which occur to the miller from filtration of his oil. Many progressive millers have installed oil-filtration equipment already this season, and it is a safe prophecy that all mills will eventually have such equipment. Again we must ask, WHY NOT NOW? In closing we cannot refrain from quoting the words of T. J. McNulty, of Brookhaven, Mississippi, who says: "One of the drawbacks of the oil mill industry is that it takes *too long* for us to take up and use methods that will save us money."