chloride. From sterol fractions β-sitosterol and ergosterol were separated and identified.

A fairly large amounts of ferulic acid ester was also obtained. Unknown compound having a melting point of 157-158°C was obtained. Lieberman-Burchard reagent gave a blue color. The molecular weight by Rast method was 370. The carbon and hydrogen contents were 83.79% and 11.77%, respectively. However, further studies have been suspended[11].

Conclusion

We have succeeded in manufacturing edible rice bran oil, because we can collect rice bran promptly.

Rice eating habit is not limited to our people. Most Asiatic people like to eat rice. Moreover, in many countries milling scale is larger than ours and it is easy to collect rice bran immediately after milling. There exists potential background for developement of rice bran oil industry with good quality.

This article reviewed our studies on edible rice bran oil.

References

1) Shokuryo, 9, 121 (1966).
2) Unpublished.
3) Shokuryo no Kako to Chozo, 1, 1 (1953).
4) Presented at the annual meeting of Japan Chemical Society, Tokyo. April (1958).
5) Shokuryo, 9, 124 (1966).
6) Shokuryo, 9, 125 (1966).
7) Shokuryo, 9, 125 (1966).
8) Eiyo to Shokuryo, 14, 397 (1962).
9) Eiyo to Shokuryo, 14, 399 (1962).
10) Shokuryo, 9, 126 (1966).
11) Agri. and Biol. Chem., 26, 180 (1962).

Fertility Counter

T. KAWAI

Chief, 3rd Laboratory of Genetics, Division of Genetics, Department of Physiology and Genetics, National Institute of Agricultural Sciences

This apparatus is devised to sort out and count fertile and sterile spikelets. The apparatus is composed of seed sorter. seed liner, counter and indicator (A, B, C and D in Fig. I respectively).

In the sorter (A), air is forced to flow through by suctionpower of a blower (d) as indicated by arrows. Threshed fertile and sterile spikelets (mixed) are thrown into a hopper (a) with a vibration mechnism. Spikelts gradually drop into a lamp-chimney-shape glass tube (b). Two white drop-shape bodies (c, Fig. I and Fig. II-1) are movable in order to adjust rate of air-flow through the gap between drop-shape bodies and the glass tube wall. The amount of flowing air is adjusted by a dumper of the blower (d). Seeds float and dance for a while in expanded part of the glass tube (Fig. II-1), and then fertile spikelets drop down to a tray (e), while sterile spikelets are sucked into left part of the sorter. The left part of the sorter consists of an electric blower (d) and a cyclone system (f). Sterile spikelets sucked into the cyclone, where speed of air-flow is suddenly reduced, drop down in a plastic vial (g).

The seed liner and the seed counter are housed in a box (Fig. I). Seeds or sterile spikelets (separately) are thrown into a hopper (h, Fig. I and Fig. II-2). The seed liner is an inclined V-shaped gutter (i, Fig. II-2) with a vibration mechanism using an electric magnet. Amplitude of the vibration of the gutter can be adjusted by changing voltage of electric current charged to the magnet by a sliding transformer (j, Fig. I). Seeds, fallen into the

gutter through other hopper (k, Fig. II-2), gradually go down in stream with vibration. Near to the end of the gutter, there are two square openings on both slopes of the gutter (1, Fig. II-3) making a narrow bridge. Seeds go through this narrow bridge in a line. Surplus seeds fall down into a vinyl pipe attached to the openings (m, Fig. II-4 and-2) These seeds are blown back through the pipe to the hopper (h) and again go into the seed liner. This circulation of seeds is continued until all seeds pass through the narrow bridge of the gutter.

Seeds thus line-upped fall into a hole (n, Fig. II-2) of a rectangular pipe leading to the counter.

The counter is composed of a rectangular tube (o, Fig. II-5), a small lamp and a phototransister (p and q, Fig. II-5). A light beam (5 × 1.5mm) from the lamp on one side of the tube is directed to the phototransister on the opposite side of the tube. When one seed passes through the light beam in the tube, a pulse is generated in electric current charged to the phototransister. The pulse, after appropriate filtration and amplification, gives a signal to the indicator.

The indicator (D, Fig. I) is composed of four number-indicating tubes and necessary circuits for their operation. In every pulse from the counter, viz., every passing of seed across the light beam, number on the indicator tube increases one by one.

The apparatus was originally designed for rice smaples. It takes 3 minutes and 8 seconds for counting 1000 fertile rice seeds by this apparatus, which is less than one half of that by man hand (7 minutes and 6 seconds). Counting error is always in plus side, about 0.5 % on an average, and 1% at the maximum. Time for separately counting both fertile and sterile spikelets from 50 panicles is 83 minutes, being less than that by man hand (100 minutes). The fertility measured by this apparatus is generally lower than that by man hand. The error ranges between +3% and −8% and was −1.7% on average. These errors are probably caused on one hand by counting separated outer and inner lemmas of one sterile spikelet (as two spikelets), and counting fragments of branch, and on the other hand counting two spikelets which almost simultaneously pass through the light beam as one spikelet.

Mental tension of labourer is reduced by using this apparatus and this enhances efficiency of fertility measurement in continuous work. This apparatus can be used for samples other than rice, at least, for counting seed.

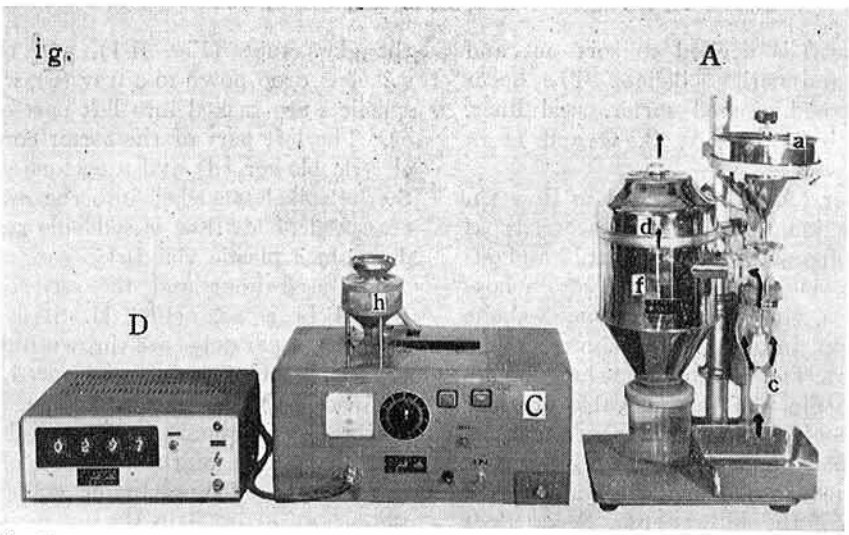

Fig. 1.

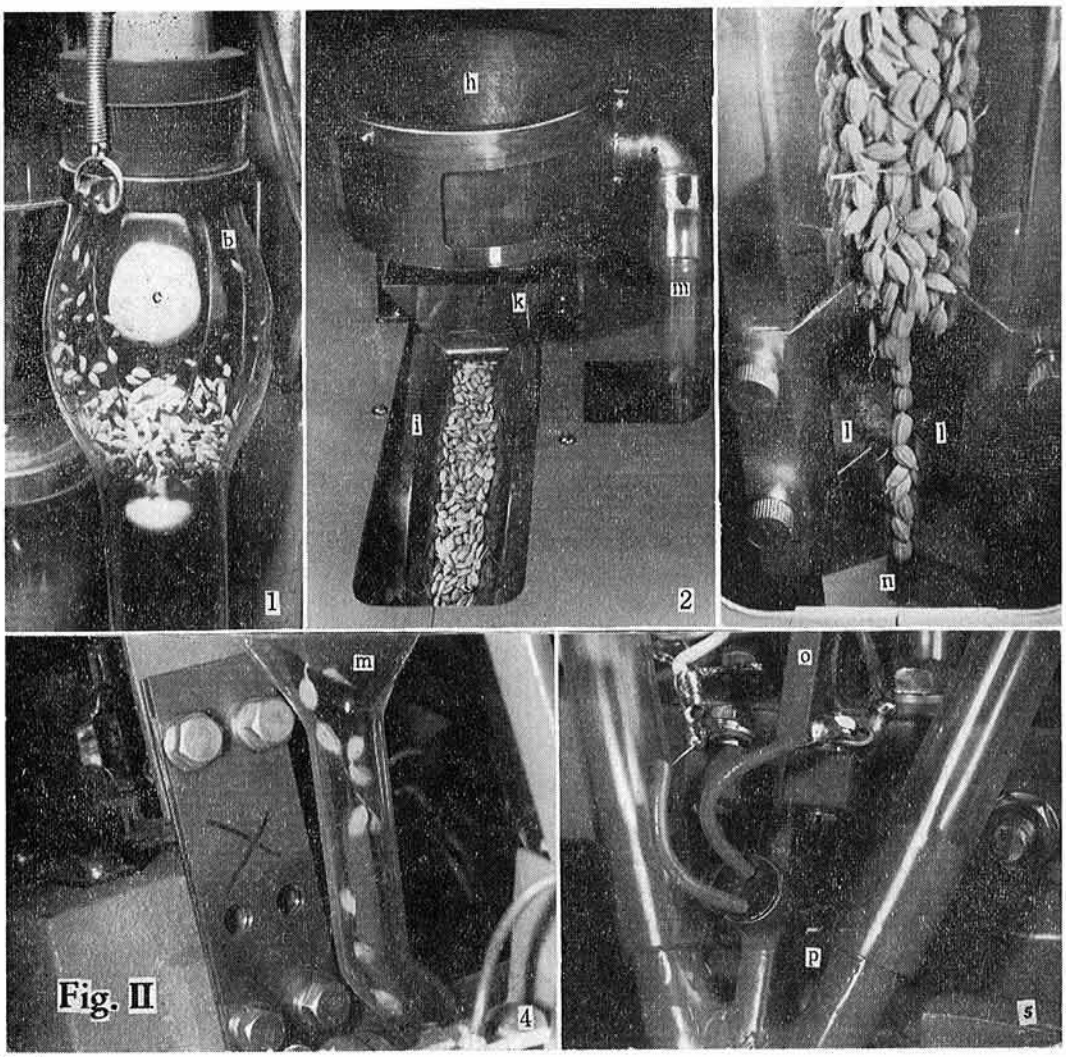

Fig. 2.