4. The amount of nitrites in bleached flours is very small, the average being 6.3 parts per million for all the samples examined. There is little difference in the amount of nitrites produced by the two kinds of bleachers.

5. The amount of nitrite in a bleached flour is approximately proportional to the amount of nitrogen peroxide that has been used. The average amount of the bleaching agent used by twenty-five Nebraska mills would accordingly be approximately 5 cc. per kilogram of flour.

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THE COMPOSITION OF SOME EDIBLE SEEDS FROM CHINA.

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The chemical study of the products described in this paper was undertaken at the suggestion of Prof. Lafayette B. Mendel, to whom the seeds had been forwarded by the Hon. Wu Ting Fang, ex-Minister to the United States from China, with a request for information regarding their nutritive value.

Three types of seeds were examined

Chinese Lotus	*Nympaea tetragona*
Chinese Sweet Almond	*Prunus Amygdalus*
Gingko Nut	*Gingko biloba*

The literature on food stuffs contains few references to these plants or their seeds.

The sweet almond is reported to contain 2.9 per cent. of cane sugar and *Lotus Suaveolens* an alkaloid cytosine, $C_{11}H_{14}N_2O$.

Lotus Arabicus is stated to contain a glucoside, lotusin, associated with an enzyme, lotase.[2] Under the influence of the latter, or when boiled with a dilute mineral acid, lotusin yields glucose, prussic acid, and lotoflavin, $C_{15}H_{10}O_6$. *Gingko Biloba* also called the maidenhair tree, is fully described in the annals of Botany, XIV. It is cultivated as a sacred tree in gardens in China and Japan, and is grown to some extent in Europe and America. It sometimes attains a height of 30 meters and a circumference of 8 meters. Formic acid has been found in the growing tree,[3] and the nuts contain caprylic acid and as much as 4 per cent. cane sugar.[4]

Methods of Analysis.

Only the edible portion of the nuts were used. In the case of the gingko nuts the kernels comprise 59 per cent. and the shells 41 per cent. of the entire nut. The gingko nuts and lotus seeds were ground to a

[1] Czapek, Biochemie der Pflanzen, I, 306.
[2] Loc. cit.
[3] Ibid 2, 442.
[4] Ibid 1, 306.

fine powder, while the almonds were sliced as fine as possible. The latter process was necessary to retain the oil which is present in abundance. Unless otherwise stated, the methods used were those of the Association of Official Agricultural Chemists.[1] Starch was determined by the diastase method in the residue after extraction with ether. In the case of the almonds, the sugars were removed by boiling with 95 per cent. alcohol and estimated as cane sugar by Allihn's method after inversion with HCl.

Moisture determinations on the air dry material gave:

	Per Cent. H_2O
Gingko nuts	15.7
Lotus seeds	12.2
Almonds	7.3

Proteids were determined by multiplying the percentage of nitrogen found by the Kjeldahl method by 6.25.

In each case the seeds were thoroughly extracted with ether and then with 95 per cent. alcohol and nitrogen determined on the residue. The same percentage of nitrogen was found before and after extraction, showing that the nitrogen present is all in a form insoluble in alcohol, at least within the limits of experimental error (0.1 per cent).

Fats were determined by extracting the dry sample with ether for twelve hours, grinding to a fine powder and extracting for twelve hours more.

In the case of the almonds, the sliced material gave 54 per cent. fat without grinding, 56.5 per cent. when coarsely ground and 57.3 per cent. when powdered.

Pentosans were determined by distilling with HCl and precipitating furfuraldehyde with phloroglucinol as described by Krober, Rimbach and Tollens.[2]

The results were calculated to "pentosans in general" using the tables in Z. physiol. Chem., **36,** 239.

Starch was determined by the diastase method, care being taken to see that no starch remained unaltered. In the case of the lotus seeds and gingko nuts, the samples were not extracted with alcohol, and any soluble sugars are included in the figures for starch.

Cane sugar was determined in the almonds by extracting with ether and boiling 95 per cent. alcohol, inverting with HCl (2 per cent.) and determining invert sugar by Allihn's method. The results are as follow and are calculated to moisture free material:

[1] Bull., 65, Bur. Chem., Dept. Agri.

[2] Z. angew. Chemie., 1902.

	Gingko Nuts	Lotus Seeds	Almonds
Protein (N x 6.25)	13.1	21.3	25.0
Starch	67.9	47.0	none
Fat (ether ext.)	2.9	2.6	57.3
Ash	3.4	4.5	2.7
Fiber	1.0	2.8	3.1
Pentosans	1.6	3.6	3.8
Cane Sugar	Not det.	Not det.	2.1

The iodine absorption number of the fat of the almond was 92.3 per cent. and its reading on the Zeiss butyrorefractometer 70.5° at 15.5°, its refractive index being 1.4726.

The lotus seeds were distilled with $\frac{N}{1}H_2SO_4$ and no HCN could be detected in the distillate, showing that no glucoside is present capable of forming HCN.

Analyses were made of the ash of the seeds. The material being charred below redness, extracted with dilute HCl and charred to a white ash and added to the first HCl solution.

Iron and aluminum were separated by the basic acetate method, and determined where present in sufficient amount. Calcium was determined in the filtrate in acetic acid solution. Separate portions were used for alkalies and P_2O_5.

	Gingko Nuts	Lotus Seeds	Almonds
Fe_2O_3	0.05	0.08	trace
Manganese	trace	trace	trace
CaO	1.0	6.25	10.70
MgO	7.0	9.23	13.80
P_2O_5	14.7	37.00	37.50
Na_2O	trace	0.1	trace
K_2O	55.2	36.9	34.6

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NOTE.

Determination of Crude Fiber.—Owing to the large number of crude fiber determinations required of this laboratory—1700 were made the past year—it is impossible to adhere strictly to the official method as laid down in Bulletin 46, and the following modification is used:

Weigh 2 g. of the substance in an S. and S. Hülsen capsule. Dry for four hours in water oven. Extract with ordinary ether or use the residue from the determination of the ether extract. To this residue, in a graduated 700 cc. lipped beaker, add 200 cc. of boiling, 1.25 per cent. sulphuric acid; cover the beaker with a watch glass. Boil at once and continue boiling for thirty minutes, being careful to keep the volume to