of Indian corn. This paper is remarkable in that no mention is made of the previous work of Heald* upon this plant, although the work of Kahlenberg and True, suggesting Heald's work, and published at the same time, in the same journal,† is freely quoted. This omission is the more remarkable since the author's results, when working with acids, are widely different from those obtained by Heald. The undersigned, in collaboration with Mr. J. F. Breazeale, had occasion last winter to repeat the work of Heald, working to closer limits than that investigator had found desirable. It may be worth while to state the results of these three investigations as to the limit of dilution for various acids with seedlings of corn.

	Loew.	Heald.	Cameron and Breazeale.
Hydrochloric acid	n/512	n/3,200	n/3,000.
Sulphuric acid	n/512	n/3,200	n/3,000.
Nitric acid		n/3,200	n/2,250.
Hydrobromic acid		n/3,200	
Acetic acid		n/400 ‡	n/850.
Malic acid			n/1,250.
Oxalic acid			n/1,750.
Succinic acid			n/600.

Just what is meant by 'toxic limit' seems to be somewhat indefinite judging from the printed descriptions of the work of this kind, but in the three investigations under consideration the same methods of work and the same, or very similar, criteria have been used, and the comparison seems to be fair. The confirmation of the results of Heald by those obtained in my own laboratory makes those of Loew the more inexplicable.

The author expresses astonishment that the limits for maize should vary so widely from that found for *Lupinus albus* by Kahlenberg and True. The work in my own laboratory, as well as that of Heald, has shown that very much greater differences exist when other plants are involved, and that *a priori* predications upon this point are at present impossible.

* *Bot. Gazette*, 22, 125 (1896).

† *Bot. Gazette*, 22, 81 (1896).

‡ So stated in Heald's tabulation, but from the description of his experiments it seems probable that this is a typographical slip, and should be n/800.

He also seems to have difficulty in understanding the relative action of kations in the presence of more toxic anions. The literature of this subject is now fairly large, as witness the work of Loeb in Chicago, Coupin in France, not to mention a number of other investigators, and this particular point has been specifically discussed in connection with agricultural plants by Kearney and myself,* and more recently by True and Gies,† although no reference is made to any of these investigations in the paper under discussion. It may be well to state here that the work done in my laboratory, which I have already communicated to the American Chemical Society at its meeting in Cleveland, Ohio, June 30, 1903, will be described shortly from a technical point of view in the *Journal of Physical Chemistry*, and its value for and bearing upon certain important agricultural questions will be fully discussed in an early publication from the Department of Agriculture.

F. K. Cameron.

U. S. Dept. of Agriculture, Bureau of Soils, Washington, D. C., September 7, 1903.

* Report 71, U. S. Dept. of Agriculture (1902)

† *Torrey Botanical Club*, 30, 390 (1903).

SHORTER ARTICLES.

PRIMITIVE FLAGEOLETS.

There is a kind of primitive flageolet made by the western tribes of North American Indians as follows: A section of cane is open at both ends, but has a joint between the ends; the septum of this joint closes the tube. Two holes from three sixteenths to one fourth of an inch in diameter are made from the outside into the cavity, close to and on opposite sides of the septum. A shallow air channel is cut in the outside of the cane from one hole to the other, and three, four or six finger holes are made in the cane in the part below the septum. The Rees and Shoshones make a septum of wax. When so constructed and nothing further added the 'mystery flute,' described by early writers, is completed when the upper of the two holes at the septum and the air channel are covered by a finger. Blowing through the cane from the upper end produces a sound whose pitch is changed by the finger holes.

The mystery consists in placing the finger over the upper hole and air channel exactly in the correct place. Usually a piece of cloth, skin, etc., is tied around the cane at this point.

The National Museum has specimens of this instrument from the following tribes, viz., Apaches, Cocopas, Mohaves, Papagos, Pimas, Rees and Shoshones. Other examples have a tube with septum made by splitting a cylinder, excavating the halves and gluing them together.

I had supposed until recently that this method of constructing the flageolet was not to be found outside of North America. I have never read a description of this instrument except from travelers in North America. But recently in a collection of specimens made by Dr. W. L. Abbott, at Siaba Bay, Island of Nias, off the west coast of Sumatra, I find a specimen made in the manner stated above except that in the place of a septum the bore of the cane is plugged with wax. The covering of the upper hole and air channel is a long leaf wrapped around and protected by a bandage of cotton sheeting.

It has seven finger holes and a thumb hole. Its Malay name is Siro'oni.

E. H. HAWLEY.

SCIENTIFIC AND TECHNICAL EXAMINATIONS.

THE United States Civil Service Commission invites special attention to the examinations which will be held, beginning October 21, 1903, at various places throughout the United States, for the following-named positions:

Acting assistant-surgeon, Public Health and Marine Hospital Service.

Aid, Coast and Geodetic Survey.

Assistant examiner, Patent Office.

Assistant (scientific), Department of Agriculture.

Bookkeeper, Departmental Service.

Civil and electrical engineer, Departmental Service.

Civil and electrical engineer, Philippine Service.

Civil engineer and draftsman.

Computer:

Coast and Geodetic Survey.

Nautical Almanac Office.

Naval Observatory.

Deck officer, Coast and Geodetic Survey.

Draftsman:

Architectural.

Copyist, topographic.

Junior architectural.

Topographic, Land Office Service.

Electrical engineer and draftsman.

Engineering and hydrographic aid.

Farmer—industrial teacher.

Farmer—industrial teacher with a knowledge of irrigation.

Fish culturist.

Irrigation engineer.

Kindergarten teacher.

Manual training teacher.

Matron — seamstress — female industrial teacher.

Meat inspector.

Mechanical and electrical engineer.

Observer.

Pharmacist, Public Health and Marine-Hospital Service.

Physician, Indian Service.

Superintendent of construction.

Teacher, Indian Service.

Trained nurse, Indian Service.

Trained nurse, Philippine Service.

As the demand for persons with these qualifications is greater than the present supply, the Commission invites all persons who are qualified to take these examinations, as they offer an excellent opportunity to enter the Federal service, with good prospect for advancement. Information concerning the character of these examinations, the required qualification, age limits, salaries at which appointments are made, etc., may be found in the Manual of Examinations revised to July 1, 1903.

SCIENTIFIC NOTES AND NEWS.

DR. H. W. WILEY, chief of the Bureau of Chemistry, U. S. Department of Agriculture, has returned from Europe, where he has been studying the question of enforcing the law in regard to the exclusion of adulterated and falsely labeled food.