The authors have previously reported an ion-exchange method for concentrating the free amino compounds in dilute potato extract simulating starch factory processing water (3). In this method, the solubles were extracted from ground, sulfited potatoes by centrifuging and washing the centrifuge cake with water equal to one-third the weight of potatoes ground. The protein was removed by heat coagulation to prevent clogging during subsequent passage of the liquor through the ion-exchange column. The amino compounds were concentrated and separated from most of the other potato solubles by absorption on a 300 ml column of Dowex 50\textsuperscript{H+} form followed by elution with two normal NH\textsubscript{4}OH. In a typical experiment, 28\% of the total solids and 75\% of the amino compounds originally present in six liters of the dilute liquor were recoverable in 350 ml of eluate combined from the more concentrated middle fractions. The most concentrated fraction contained 8.3\% solids and the combined middle fractions contained 4.7\% solids.

This note presents results obtained with a column of 7\(\frac{1}{2}\) cm inner diameter containing 3 liters of wet resin (20-50 mesh). There were three changes in the technique as outlined in our previous paper. First, for convenience in handling, the potato juice was diluted to 3.0-3.5\% in the extraction instead of 1\% as before. Second, 100 ml fractions of eluate were collected instead of 50 ml. Third, all eluate fractions containing less than 2\% solids were discarded, as compared with a 1\% solids limit in the earlier work.

Demonstration that the 3\% level of liquor solids could be advantageously used to charge the column is of considerable importance. In the new potato starch factories, operators are seeking to alter conventional practices so that most of the soluble constituents will be discharged at about 3\% solids instead of the usual 1\% solids of starch processing water. Interest in the recovery of the solubles from starch manufacture is now at an all-time high. With it becoming necessary to stop the discharge of these substances into streams, starch factory operators are studying all possible means of converting the waste into a saleable by-product.

Table 1 presents data for a typical run in which amino compounds were recovered by ion exchange.

Figs. 1 and 2 should also be considered along with the examination of Table 1.

1\textsuperscript{Accepted for publication August 16, 1961.}
2\textsuperscript{Eastern Regional Research Laboratory, Eastern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Philadelphia 18, Pa.}
3\textsuperscript{Mention of this trade name does not imply a recommendation or endorsement by the U. S. Department of Agriculture over others not mentioned.
### Table 1.—Typical amino compounds recovery run using ion-exchange resin process.

**A. Charging the column**
- Volume of resin column, liters: 3.
- Weight of potatoes used, lbs: 70.
- Effluent flow rate, liters per hour: 4.5
- Potato liquor:
  - Solids content, per cent: 3.05
  - Volume put through column, liters: 26.
  - Solids introduced to column, g: 800.
  - Solids retained by resin, g: 406.
  - As per cent of wt. introduced: 50.8

**B. Eluting the column**
- Eluting agent: 2N NH₄OH
- Elution flow rate, liters per hour: 2.5
- Potato solids eluted:
  - Wt., g: 284.
  - Per cent, based on total amount introduced: 35.5
  - Per cent, based on amount retained during charging: 70.
- Eluate containing 2% or more solids:
  - Fractions, number: 23 to 42
  - Total volume, liters: 2.
- Eluate solids content, per cent:
  - Combined fractions 23 to 42: 14.2
  - Most concentrated fraction (number 38): 26.8
- Eluate pH (fractions 23 to 42):
  - Range: 3.1 to 10.2
  - Most concentrated fraction: 7.5

---

**Fig. 1.—Variation of pH during elution of potato amino compounds from Dowex 50 resin with 2N NH₄OH.**