

cream-of-tartar, and one made by substituting calcium acid phosphate for the cream-of-tartar, two different amounts of Rochelle salts and calcium acid phosphate were used, and each subjected to the same conditions.

The difference in the retarding action of these residues is easily seen from the following table (digestion carried on five hours) : —

	Grams of Salt used.	Weight of Precipitate.	Grams digested.	Per Cent digested.
No. 1	0.0	.3441	.6559	100.0
No. 2	0.5 (Rochelle)	.5678	.4322	65.9
No. 3	1.0 (Rochelle)	.7700	.2300	35.0
No. 4	0.5 (Ca H <sub>4</sub> (PO <sub>4</sub> ) <sub>2</sub> )	.8220	.1780	27.1
No. 5	1.0 (Ca H <sub>4</sub> (PO <sub>4</sub> ) <sub>2</sub> )	.8852	.1148	17.5

The superiority of cream-of-tartar over calcium acid phosphate as the acid principle of a baking-powder is shown very well in this last experiment ; and, although it is claimed that the latter form of powder furnishes the necessary phosphates for building up the bone-tissue of the body, yet this benefit is rather overbalanced by the harm done by the retardation of the digestive process.

In some cases where it was desirable to compare the effects of two baking-powders directly, or in cases where insoluble salts were used, time digestions were resorted to, in order to avoid loss in neutralizing and filtering.

For these experiments 20 grams of coagulated albumen, and 200 cubic centimetres of artificial gastric juice, were employed.

The digestions were carried on in a 40° C. water-bath, stirred well, and observations made regarding the time of disappearance of the coagulated albumen in each digestion.

In the first series, three amounts of a phosphate baking-powder were used, and, as in previous experiments, a control free from powder.

	Grams of Powder.	Time (hours) to digest.
No. 1	0.0	22
No. 2	0.5	30
No. 3	1.0	42
No. 4.	1.5	50

Having obtained the datum in a previous experiment that a phosphate powder adulterated with alum had great retarding action on digestion, a comparison was made between a pure phosphate powder and one known to contain alum ; and, although the digestion was not carried on until all of the coagulated albumen had disappeared, yet it was carried far enough to enable the observer to make a good comparison. No. 1 contained no salt ; No. 2, .5 of a gram of pure phosphate powder ; No. 3, 1 gram ; No. 4, 1.5 grams ; No. 5, .5 of a gram of impure phosphate powder ; No. 6, 1 gram ; No. 7, 1.5 grams.

The albumen in No. 1 was first to disappear, followed closely by No. 2, then a little later by No. 5 ; and so on, in every case the one containing the pure phosphate powder digesting before the one containing a similar amount of impure powder.

Ammonium carbonate has been put down by some as inhibiting digestion, but others claim that on baking it volatilizes and goes off as ammonia gas, leaving a harmless residue ; but, in fact, only a small portion of the whole is driven off in this way, for the ammonia forms a compound of ammonium tartrate immediately on heating, and this latter salt is not easily decomposed by heat.

To discover the relative inhibitory action of this residue on digestion, a series was made, using comparative amounts of aluminium phosphate, Rochelle salts, and ammonium tartrate. No. 1 contained no salt ; No. 2, .5 of a gram of aluminium phosphate ; No. 3, 1 gram ; No. 4, .5 of a gram of Rochelle salts ; No. 5, 1 gram ; No. 6, .5 of a gram of ammonium tartrate ; No. 7, 1 gram.

No. 1 was digested in about 45 hours, followed closely by No.

6, and the remaining ones digested in the following order : Nos. 4, 7, 5, 2, 3.

As far as could be seen from this series, there is very little difference in the inhibitory powers of the Rochelle salts and the ammonium tartrate ; and the latter cannot be considered, therefore, to be more harmful than the residue of a pure baking-powder.

As a summary of the facts brought out by this investigation, we find (1) that the residues of all baking-powders, no matter how pure may be their constituents, have a harmful effect on digestion, due, in all probability, primarily to the fact that the salts are acted upon by the hydrochloric acid of the gastric juice with the formation of more soluble compounds, and, secondarily, that these salts may form organic compounds with albuminous bodies in the same manner as many of the metals do ; (2) that calcium phosphate, on account of its great inhibitory action on digestion, must be regarded as a poor agent for the manufacture of a baking-powder, while ammonium tartrate may be looked upon with more favor ; (3) that the presence of alum in a powder made with calcium phosphate greatly increases its retarding action ; (4) that the least harmful baking-powder is one containing only the bicarbonate of soda and cream-of-tartar, and that the presence of any other chemical substance, however harmless it may be in itself, tends only to increase the complexity of the residue and impair the activity of the gastric juice.

R. TAYLOR WHEELER.

Jersey City, N.J., Dec. 24.

#### Resemblance of People.

WHILE in Chicago during the Republican convention of the summer of 1888, it occurred to me to make an estimate of the number of people that must be taken, in order that there may be in general two persons who look enough alike for the resemblance to be noticed at first glance, taking account only of the features, and not of characteristics of voice, motion, etc., which of course help us very much to distinguish persons.

Posting myself upon a street-corner so as to face the moving crowds of people, and throwing myself into as passive a condition as possible, I gazed intently upon the passing faces. Out of 700 persons tried, 29 brought to mind some acquaintance. I estimated the number of available acquaintances at 5,000 at least, for among the number suggested some could scarcely be called acquaintances. This would indicate, that, among 120,000 people, one will likely be found to resemble any one person enough to be noticed at a glance ; or among  $\sqrt[4]{120,000}$ , i.e., about 400 persons, two will probably be found to resemble enough to be noticed at a glance. Of course, the result depends upon one's memory of faces and the ease with which faces are distinguished, and undoubtedly upon many other things.

W. S. FRANKLIN.

Lawrence, Kan., Dec. 23.

#### A Remarkable Bowlder of Nephrite or Jade.

THE writer lately obtained in southern Oregon a bowlder of jade, which is the largest erratic mass of the mineral yet found on this continent. It was found among the auriferous gravel of a stream near a small mining hamlet by a gold prospector. Its color is of a mottled deep leek green, interspersed with veins of light green and yellow. It is turtle-back in form, and weighs 47½ pounds avoirdupois. To the eye it is semi-translucent, splintery, and fibrous in its structure ; but that it is remarkably compact and homogeneous in character, is attested by a blow, when it produces a clear metallic ring like bell-metal. The specific gravity of three small chips taken from different parts of the bowlder is 2.949, 3.01, 3.04, the difference being probably due to the variance of magnetite in the pieces. The extremes correspond nearly with those given by Dr. Fischer (*Nephrit und Jadeit*, p. 54, Stuttgart, 1880) and by Clarke (*Proceedings of the United States National Museum*, p. 116, 1888). This occurrence of nephrite bowlders among the river-gravel of our Western coast streams, in connection with Mr. G. M. Dawson's (*Science*, xi. p. 186), tends to confirm the belief that it was found by the native races of that coast in sufficient quantities from which to manufacture their various implements of jade.

JAMES TERRY.

New York, Dec. 30.