clear after sterilization and has given excellent results as a bacteriological medium.

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THE EFFECT OF FEEDING VELVET BEANS TO PIGEONS

THREE groups of three mature pigeons each were fed as follows:

Pen I: Ground velvet beans.

Pen II: Ground velvet beans plus aqueous extract of rice bran.

Pen III: Ground velvet beans plus aqueous extract of rice bran plus 10 per cent. butterfat.

The beans were fed dry and at the start were eaten readily. Pens II and III were given an aqueous extract of rice bran as the sole source of drinking water.

On the second day after feeding the beans, all birds showed ruffled feathers and a drawn-up, sleepy appearance. On the fourth day, one bird in Pen I and one in Pen II died. The remaining birds were in very poor condition. The loss in weight averaged about 80 grams.

Check birds receiving polished rice made slight gains during the same period, and were apparently in thrifty condition. On the fourth day the feed was changed to polished rice in all pens. One bird in Pen III was too weak to eat and was hand-fed on polished rice. Recovery was rapid in all cases.

Two pigeons were then fed ground velvet beans from another source. They rapidly developed the appearance of the birds in the former test. Both died on the eighth day.

Ground velvet beans were forced into the crops of two pigeons that had developed symptoms of severe polyneuritis. A decided improvement in condition was noticed. The birds died, however, on the following night in one case and on the second day in the other.

An aqueous extract of velvet beans furnished as the sole source of drinking water to pigeons receiving polished rice, apparently delayed the onset of polyneuritis, but did not entirely prevent it. The difference in appearance of the birds receiving the extract and of check birds receiving polished rice alone was striking. The feathers of the former remained smooth and glossy, while those of the latter soon became dry and rough looking. These results seem to indicate at least a small amount of water soluble B in the beans.

An effort will be made to ascertain the cause of the ill effect.

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A CHEMICAL SPELLING MATCH

A UNIQUE modification of the old-time spelling bee was staged at the West Virginia University last May with rather remarkable success.

At the suggestion of the writer the chemical faculty of the university arranged to hold a contest among the 376 students taking the course in general inorganic chemistry, and this contest was to be a public match for the spelling of chemical formulæ of such compounds as are ordinarily included in a first year's college course in chemistry.

These students are normally divided into sixteen quiz sections, and it was evident that so many could not be brought on the floor at the same time for spelling. Therefore, eight preliminary matches were held at seven o'clock in the evening of the final match, where two sections, in charge of two instructors, spelled against each other, and then a number chosen from each of these groups, representing one out of every eight students, who became eligible to the final match.

The preliminaries lasted about one hour, after which all the students assembled in the armory and the winners lined up for the final contest. Professor Samuel Morris pronounced the words, and three well-known chemists, not connected with the department, acted as judges. For example, ortho phosphoric acid was given, and the student whose turn it was replied by saying "H_3PO_4."

Upwards of 700 formulæ were prepared for the instructors' use at the preliminaries, and then 50 to 60 additional formulæ in case of emergency for the final match. As a prize, Mr. J. F. Cadden, the winner, was presented with a copy of Mellor's "Modern Inorganic Chemistry." The last five students to spell down were presented with attractive certificates bearing the university seal.

A great deal of enthusiasm and rivalry be-

tween quiz sections was manifested, and the different sections came as units to boost their representatives. The students had had three or four weeks in which to prepare for the contest, and nearly all of them had been working hard for it. Our instructors are all agreed that the students participating derived great benefit from this match.

In addition to these benefits, the contest brought out the fact that our chemical nomenclature is not yet above reproach. A few instances of ambiguity might be cited: Sodium thiosulphate, $Na_2S_2O_3$, is sometimes named sodium hyposulphite and so labelled by a few manufacturers of chemicals. The latter name, however, is represented by the formula $Na_2S_2O_4$. Potassium fluosilicate and potassium silicofluoride are both used to represent the same substance. Potassium sulphocyanide and potassium thiocyanate are two names in use for KCNS. Then, again, we say hydronitric acid, or triazoic acid, or azoamide, when we mean a substance with the composition N_3H.

If these spelling bees were to be adopted by a considerable number of educational institutions it would doubtless tend to unify chemical nomenclature so that finally we should have one name only to represent a chemical compound having a definite composition. Spelling matches of this sort could also be profitably arranged between classes in organic chemistry, mineralogy and perhaps other departments of science. The contests appeal to students because they combine the elements of sport and competition. The benefits derived therefrom are incalculable, and we are now planning to make the chemical spelling match an annual event at the West Virginia University.

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SCIENTIFIC BOOKS

Proteins and the Theory of Colloidal Behavior. By DR. JACQUES LOEB, member of the Rockefeller Institute for Medical Research. New York: McGraw-Hill Book Co., 285 pp. 1922.

IN this volume the author has collected the results of his extensive investigations upon the properties of protein solutions and has attempted to found upon them a general theory of colloids. The book falls naturally into two sections. The main argument in the first half is that proteins are amphoteric electrolytes and that consequently, when hydrogen ion concentrations are duly measured and considered, proteins are found to combine with acids and alkalies according to the stoichiometrical laws of classical chemistry. This argument is illustrated and supported by numerous tables and diagrams. In the second part of the book the conclusion is established that all of the experimental results recorded can be logically explained upon the basis of Donnan's theory of membrane equilibria.

The far-reaching significance of the author's contentions may be summarized in the statement that, if justified, they dispose of colloid chemistry as a special branch of the science, with laws different from those of general chemistry. This does not, as is pointed out in the preface, detract from the importance of colloidal behavior for physiological and technical problems, but it completely changes the theoretical treatment of the subject.

A revolution in our current conceptions of colloidal solutions is hereby threatened, equal in importance to that brought about by van't Hoff and Arrhenius a generation ago in the field of crystalloidal solutions, and it seems probable, from certain reviews that have already appeared, that the battle between the new and the old points of view will be waged with equal bitterness. It is interesting to note in this connection that the veteran fighter Armstrong, now president of the Society of Chemical Industry in England, went out of his way in his recent Messel Memorial Lecture at Glasgow to refer to Loeb's "praiseworthy efforts to raise the character of the proteins from mere indeterminate lumps of jelly to a status of definite materials behaving in a simple and definite, orderly manner, if only put under comparable conditions." Since, however, he indulged in the course of the same address in his customary diatribes against the Scandinavian Ikon Arrhenius and his High Priest Ostwald, remarking that "hydrogen ion concentration is pure gibberish," his conversion to Loeb's