SEVERAL cousins of Austin B. Fletcher, who died on July 5 leaving the bulk of his fortune to Tufts College, have formally protested probate of his will by filing objections in the Surrogates' Court. The value of the estate is said to exceed $4,000,000.

Z. P. METCALF, professor of zoology and entomology in the North Carolina State College and entomologist of the North Carolina Experiment Station, has been appointed director of resident teaching in the College of Agriculture.

PROFESSOR J. W. MILLER, who has served as head of the department of electrical engineering of the Oklahoma Agricultural and Mechanical College for several years, has been appointed mechanical and electrical research engineer at the engineering experiment station of the University of Arkansas. Mr. Miller will devote his time exclusively to research work on problems of interest to the industries of the state.

MISS CLEMENTINA S. SPENCER, professor of zoology and for seven years acting head of the department in Coe College, Cedar Rapids, Iowa, has resigned and was recently married to Mr. Chester A. Momyer, of Chicago. The new head of the department, occupying the newly created Bert. H. Bailey chair of zoology, is Dr. T. H. Bissonnette, formerly of Queen's College, Ontario, and of the University of Chicago.

DR. GEORGE D. PORTER, Toronto, has been appointed head physical director at the University of Toronto, succeeding Dr. James W. Barton, who resigned last spring.

MR. ALAN G. OGILVIE has been appointed lecturer in geography in the University of Edinburgh in succession to Mr. G. G. Chisholm, who had held that position since the lectureship was founded in 1908.

WE learn from *Nature* that Dr. W. Schumann, director of the Institute of Technical Physics at Jena University, has been appointed professor of theoretical electrotechnics at the Munich Technical College; Dr. Julius Schmidt, of the Stuttgart Technical College, to be reader in chemistry at the Engineering College, Esslingen; and Dr. K. Fajans, to be assistant professor of physical chemistry at the University of Munich.

DISCUSSION AND CORRESPONDENCE

CONCERNING TUNNIES AND ALBACORES

THE huge fishes of the open seas, known as tunny, tuna and albacore, are well represented in the Mediterranean, in the West Indies and especially in the Pacific Ocean, about Southern California, Hawaii and Japan. On account of their great size, the species are rare in collections, and in no case have the forms in any one of these regions been adequately compared with those of any other.

The first thorough and by far the most important study of this group has been lately published by Dr. Kamakichi Kishinouye of the Imperial University of Tokyo.[1] Of late years, deep sea fishing has brought these fishes in great numbers to the Japanese markets, a fact which has given Dr. Kishinouye a most valuable opportunity.

In the study of the muscular layers and associated organs he finds characters of great value. Other important distinctive traits occur in the skeleton. Any treatment of the scombroid or mackerel-like fishes either systematically or anatomically must make constant use of this paper.

Dr. Kishinouye very properly restricts the *Scombridae* to the two very distinct genera, *Scomber* (in Japanese *Saba*) with the short spinous dorsal and *Rastrelliger*. The Spanish mackerel and its allies (in Japanese, *Sawara*) form the well-marked family of *Cybiidae*, visibly separated by the strong dentition, the many-spined dorsal-fin and the long parallel interhemal bones. To this group most of the known fossil mackerels belong.

The Tunnies differ from these ancestral types in so many ways that Kishinouye would make of them a distinct order, *Plecostei*, with two families, *Thunnidae* and *Katsuwonidae*, the first containing the *tunnies* and *albacores* (in Japanese, *Maguro* and *Shibi*), the latter their smaller allies (*Katsuwo*) with the peculiar trellis-like structure of the posterior hemal bones. The new name, *Katsuwonus*, is given to the section of the older genus *Euthynnus*, to which the oceanic bonito, *Euthynnus pelamis*, belongs. Two other new generic names, *Parathunnus* (*mebachi*), and *Neothunnus* (*macropterus*), apparently justified, occur in this paper, but its larger worth consists in its minute description of the structure, habits and values of each of more than a dozen Japanese species and in the finely accurate engravings by which the work is illustrated.

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PHOSPHATE BEHAVIOR IN SOILS

RESULTS obtained by extraction of soils with varied quantities of water and data obtained from displaced solutions are corroborative of the idea that phosphate in the effective solution of the soil constitutes a saturated solution. Two corollaries flow from this propo-

[1] Contributions to the Comparative Study of the so-called Scombroid Fishes, Kamakichi Kishinouye: *Journal* of the College of Agriculture, Imperial University of Tokyo.

sition: First, that different soils will have different phosphate ion concentrations, depending in each instance on the concentration of their other solutes and the reaction of their solutions. Second, that the phosphate concentration of the solution in a given soil will fluctuate also in accord with the concentration of other solutes and changes in reaction.

Any diminution of the concentration of solutes in the soil solution which reduces the active mass of cations tending to form relatively insoluble phosphates or which diminishes the buffer effect of the solution should tend to increase the phosphate concentration. The measurement of this effect has heretofore been impossible because no method has been available for the precise measurement of concentrations in the soil solution. The writers, following the suggestion of Parker, have recently shown[1] that solutions displaced from tightly compacted soils have uniform concentrations in their successive increments up to the time the displacing agent (water) begins to appear and that the total concentrations of electrolytes in such displaced solutions are inversely proportional to the total initial moisture contents of the soil. Such solutions apparently represent very closely, if indeed they do not constitute, the soil solution. Using such a procedure, we have demonstrated (unpublished data) that after a volume of solution equal to the amount of water initially contained in the compacted soil has been removed, the solutions obtained from a second displacement of the same mass of soil with an equal amount of water have decreasing total concentrations of electrolytes, but that the phosphate concentrations increase. This effect has doubtless been obscured in leaching experiments, because the leached soils have not been sufficiently compacted to prevent the admixture of the soil solution with the water poured on the top of the soil mass.

The importance of the above stated fact is that at the approach of the end of the growing season, the generally recognized diminished total concentration in the soil solution may be, and probably is, accompanied by an enhanced, or tendency toward an enhanced, concentration of phosphate. We have observed what appears to be the result of this effect in two soils, cropped to barley, during the past season, when the solutions displaced at the end of the season had very much higher concentrations of phosphate and lower concentration of other electrolytes than did the solutions displaced at the beginning of the season. It is evident that this effect may be masked by experimental error in soils of low total concentration or by increased absorption on the part of the plant if the crop being grown on the soils under observation absorbs very large amounts of phosphate in the later stages of growth.

In the latter case, while the effect may not be measurable, its existence should contribute to a greater absorption of phosphate by the plant. This effect, if generally confirmed, should explain many of the anomalies of phosphate behavior in plant nutrition and obviate the necessity for assuming any special mechanism such as the excretion of plant acids to account for the relatively large phosphate absorption as compared with low phosphate concentration in the soil solution.

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[1] "Water Displacement of Soils and the Soil Solution," Burd, John S. and Martin, J. C. In the *Journal of Agricultural Science*, Vol. XIII, Part III, July 1923.

QUOTATIONS

CHEMISTS IN HIGH PLACES

IN Rochester they tell the story that the Research Laboratory of the Eastman Kodak Company was founded by Mr. Eastman after a visit to Germany, during which a prominent industrialist boasted of his own research staff and asked Mr. Eastman how many chemists he employed upon research.

C. E. K. Mees, who had been managing director of Wratten & Wainwright, of England, from 1906 to 1912, came to be director of the Research Laboratory in the latter year, and began to make his intimate acquaintance among American chemists at the meeting of the Eighth International Congress of Applied Chemistry. He has become prominent among American chemists, and notwithstanding his increasing duties with his company, has had time to contribute much to the success of the Rochester local section. We can commend such activity to the many other plant executives. The Superintendents' Club at Kodak Park can offer many an interesting story of the early experiences of Dr. Mees as one of their number.

Not long since there were added to the duties of directing research those incident to development, which carries with it the responsibility of investigating and advising new departures in manufacture, based either upon the company's own discoveries or suggestions from others. We are pleased to say that Dr. Mees has since been made a director of the Eastman Kodak Company, the election taking place at a recent meeting of the directors. This promotion is pleasing personally, and is of interest to all chemists, proving as it does that a man properly qualified and trained, and with a willingness really to work may succeed in reaching the highest places in a corporation