members of the faculty, will preside at faculty meetings in the absence of the president and otherwise perform his duties.

HARRY S. SMITH, formerly chief of the Bureau of Pest Control of the State Department of Agriculture of California, has been appointed associate professor of entomology in the University of California, to be stationed at Riverside.

THE French Academy of Sciences has nominated M. Henri Piéron to the chair on the physiology of the senses at the Collège de France.

DISCUSSION AND CORRESPONDENCE

HORSE FLESH IN ENGLAND IN THE ELEVENTH CENTURY

A NOTE on the use of horse flesh in Europe, in SCIENCE (N. S. 44 [1916], No. 1140, pp. 638–639), pointed out that, though eaten very generally in earlier times, it went out of use as food as the result of an edict of Pope Gregory III, dating from the eighth century. This prohibition, it would seem, was more effective in Continental Europe than in England. At any rate, a book by W. Boyd Dawkins, "Cave Hunting: Researches on the Evidence of Caves Respecting the Earlier Inhabitants of Europe" (London: Macmillan Co., 1874), gives interesting information about the animals, including the horse, used for food in Roman Britain, and about the abandonment of horse flesh as food because it was again forbidden by the Church, but under different circumstances.

The bones of the Celtic short-horn (Bos longifrons) were found to be very abundant in the Romano-Celtic or Brit-Welsh stratum of the Victoria Cave, Settle, Yorkshire; also those of a variety of the ox indistinguishable from the small dark mountain cattle of Wales and Scotland, which were the chief food of the inhabitants.

> A variety of the goat with simple recurved horns, which is commonly met with in the Yorkshire tumuli . . . , and in the deposits round Roman villas in Great Britain, furnished the mutton; while the pork was supplied by a domestic breed of pigs with small canines; and since the bones of the last animal belong, for the most part, to young individuals, it is clear that the young porker was preferred to the older animal. The bill of fare was occasionally varied by the use of horse-flesh, which formed a common article of food in this country down to the ninth century. To this list must be added the venison of the roedeer and stag, but the remains of these two animals were singularly rare. Two spurs of the domestic fowl, and a few bones of wild duck and grouse, complete the list of animals which can with certainty be affirmed to have been eaten by the dwellers in the cave. . . . There were also bones of the dog, which from their unbroken condition proved that the animal had not been used for food, as it certainly was used by the men who lived in the caves of Denbighshire, in the Neolithic age. The whole group of remains implies that the dwellers in the Victoria Cave lived upon their flocks and herds rather than by the chase. And since the domestic fowl was not known in Britain until about the time of the Roman invasion, the presence of its remains fixes the date of the occupation as not earlier than that time. On the other hand, since the small Celtic short-horn (Bos longifrons) was the only domestic ox in use known in Roman Britain, and since it disappeared from those portions of the country which were conquered by the English, along with its Celtic possessors, the date is fixed in the other direction as being not much later than the Northumbrian conquest of that portion of Yorkshire.

Elsewhere in the book the author quoted tells that the

> broken bones of the horse [in these caves] . . . leave no room to doubt that horse-flesh was a common article of food at that time. It was so, indeed, throughout Roman Britain, and after the English invasion was used as late as the Council of Celchyth, in the year 787. It was forbidden by the Church because it was eaten by the Scandinavian peoples in honor of Odin. In Norway, Hacon, the foster-son of Aethelstan, was compelled to eat it by the bonders, in 956, and the revolt of the bonders, which ended in the bloody battle of Stikkelstadt, in which Olaf met his death, in 1030, was caused by his cruelties to the eaters of horse-flesh. As Christianity prevailed over the worship of Thor and Odin, it was banished from the table. The present prejudice against its use is a remarkable instance of the change in taste which has been brought about by an ecclesiastical rule aimed against a long-forgotten faith. The rule was not, however, always obeyed, for the Monks of St. Gall, in the eleventh century, not only ate horse-flesh but returned thanks for it in a metrical grace written by Ekkehard the Younger (died 1036): "Sit feralis equi caro dulcis sub cruce Christi."

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EFFECT OF PLANT EXTRACTS ON BLOOD SUGAR

OUR studies in connection with insulin led us to the conception that carbohydrate metabolism is performed by an oxidizing ferment mechanism. This theoretical conception induced us to test vegetable material, known to contain oxidases and peroxidases, for oxidizing substances having an insulin-like action. In December, 1922, we injected 5 cc. of juice from a raw potato intravenously into a 1,500 gram rabbit and noted a fall of blood sugar in one hour from 0.17 to 0.13 per cent. Since then we found that sterile pieces of raw potato, and juice expressed from these, introduced into a glucose solution, after incubation for 24

hours at 37 C, caused this to lose from 26 to 36 mg. of glucose per 100 cc.

These results were published in *Journal* of the American Medical Association on June 2, 1923, together with results indicating a diminished glycolytic power of blood from diabetics.

Winter and Smith published a note in the *Journal of Physiology*, 57:40 (Nos. 3 and 4), 1922, which appeared in this country in April, 1923, and in *Nature* of March 10, 1923, that they had obtained an insulin-like substance from yeast.

Collip, in *Nature* of April 28, 1923, states that he, working independently, found an insulin-like substance in various vegetables, in yeast and in clams. Collip's studies on insulin are of inestimable value and made it possible to obtain insulin from animal pancreas in quantities for practical use. He expected to find an insulin-like substance wherever glycogen occurred in nature, and for this reason looked for it in vegetable extracts. Our belief that oxidizing ferments cause glucose metabolism led us to examine vegetables for these ferments and for substances with an insulin-like action. It seems that Collip's theory and ours dovetail. A storehouse of food (glycogen, starch, etc.) and a ferment for the metabolism of this food are necessary wherever growth occurs in vegetables.

Our studies have led us to the tentative suggestion that insulin, which is apparently not itself an oxidase or peroxidase, indirectly stimulates or activates oxidizing ferments in the tissue cells to action upon glucose, whereas vegetable extracts contain active oxidizing ferments and act directly when injected into animals.

It would seem that the work of Winter and Smith, of Collip and of ourselves was being carried on simultaneously and independently. Collip, very properly, suggests that "these authors (Winter and Smith) would, therefore, share coincident priority with me in this particular." We think that we should be included in this share of priority.

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A QUESTION OF RHETORIC

WHY do scientists like to write sentences like the following, which is quoted from the speech of a distinguished man as reported in SCIENCE, "Among the environmental factors which influence the structure and functions of the living organism, nutrition is of primary importance"? The sentence is absolutely correct, and doubtless conveyed the meaning intended to the audience of scientists. But we can sum up the substance of it in three words, "food is important." When so expressed it seems hardly worth saying. Possibly this does not express the meaning quite as accurately as the sentence used, but any doubts that might arise would be fully cleared up in the rest of the speech.

To be sure, more is implied in the sentence used than by the three words, "food is important." There is the suggestion of influencing structural changes by such means, as well as the elimination of any discussion of the effects of heredity, but it is doubtful if many of the scientists in the audience received the full value of such suggestions.

The sentence may have been all right for the audience, but the trouble is that when a person gets used to such methods of expression it is difficult to change when talking to ordinary people. A single unusual word is readily absorbed without breaking the thought. It very often adds to the force of the expression. By unusual word I am not now referring to one that is so unusual that it is not understood, but to one that is not the ordinary expression of the listener. Each such word causes a slight delay in grasping the thought. In the sentence quoted we find seven words which might not convey the thought immediately, and which would therefore be classed as unusual by this definition. Take, for example, the word "primary." The meaning is clear, but how many people would use it as used in ordinary conversation? The only use that most people make of the word "primary" is in connection with the schools.

With seven such words in so short a sentence, a certain amount of mental alertness is necessary to keep up with the speaker, or of concentration to read it. And when the thought reaches home, it is such a commonplace thought that it does not provide any stimulus for concentration on the next sentence.

But why not omit the sentence entirely? Why is it necessary to claim "primary importance" for the subject of nutrition? Would any anatomist deny it?

I do not want to criticize this speaker in particular, but am only pointing out one reason why scientists are not more often asked to explain their observations in publications that pay well. Professor Dry-as-dust is not as often the one whose learning is over the heads of his audience as the one who makes commonplace statements in language that requires an effort to understand it.

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QUOTATIONS

MEMORIES OF SIXTY YEARS

THAT a man who became a university graduate in 1859 has published in this year 1923 a volume of vig-