

"infants" milk is obtained, and the tests to which the milk should be subjected, were also discussed. It was agreed that when a change from dry to green food was made, it must be done gradually, and also that the milk from cows on good pasture was permissible for the feeding of young children, and could be recommended. The congress did not, however, feel that there was unanimity in the proposals which had been made, so it was finally decided that a special commission should be appointed to draw up regulations for the veterinary control of milk, and to submit them to the next International Dairy Congress.

The following were elected to the special commission:—Poels, Rotterdam; Regnér, Stockholm; C. O. Jensen, Copenhagen; Martel, Paris; Trotter, Glasgow; Bougert, Berlin; Ostertag, Berlin; Winkler, Vienna; Zschokke, Zurich; Malm, Christiania; Happich, Dorpat; Fettick, Budapest; Fiorentini, Milan; with power to add to their number.

A recommendation was made to the milk associations of the various countries to appoint committees, which should work with the object of getting the control system introduced into all public and private ventures.

The fifth subject dealt with the supervision of the milkers and attendants, and the visiting of them in their homes by a regularly appointed medical man was urged. Cleanliness in the habits of dress of the milkers was also strongly recommended.

In the second section of the congress the subjects dealt with have a more practical and less scientific bearing, with the exception of the seventh subject, noted below. The sixth subject, for example, treated of what demands should be made in the case of new milk intended for direct consumption, of condensed milk, and of dried milk. The congress passed a number of strong recommendations, which, if they could only be carried out, would be of the greatest possible benefit to the consumer, but to the producer they would necessitate a heavy expense and a consequent increase in the cost of the milk.

Subject number seven placed before the section was a question dealing with analytical methods to be employed in testing milk and dairy products. In addition to the ordinary fat determination, and the taste and smell, it was advocated that a test for dirt should be made also the reductase test (Barthel), the fermentation test (Walter), and the leucocythemia test (Walter) and the catalase test. The alcohol boiling test and a determination of the acidity were also advised.

No unanimous resolution was adopted, but the general feeling of the congress seemed to be that the above-mentioned tests could be used with most satisfactory results, whether the milk was intended for direct consumption or for the manufacture of butter, cheese, &c.

The ninth subject, which dealt with cheese control, attracted a large amount of attention from representatives of countries exporting cheese. It was resolved by the congress that it should be left to the next congress to fix what can be regarded as the normal amounts of dry matter and fat in cheese. The permanent committee was charged with the task of undertaking the necessary preliminary work. It was also recommended that margarine cheese should not be made up in form of the ordinary types of commercial cheese.

The question of the training and instruction of the personnel of dairies was closed with an invitation to the societies of each nation to draw up methods and conditions of instruction.

Finally the congress resolved that it is absolutely indispensable, for the avoidance of misunderstandings, that in all dairy publications the metric units of measure and weight should be used, and for temperatures the degrees centigrade.

At the conclusion of the congress most of the members paid a visit to Örebro, where the twenty-first General Swedish Agricultural Exhibition was held. These exhibitions are held once in five years in different parts of Sweden. The show, somewhat spoilt by rain on the first day, was excellent. The members of the Dairy Congress had then an opportunity of taking part in one of four different excursions. Those who were interested chiefly in agricultural and educational matters visited Ostergötland and Scania, and were rewarded by a most interesting and instructive trip.

THE BRITISH PHARMACEUTICAL CONFERENCE.

THE forty-eighth annual meeting of the British Pharmaceutical Conference was held at Portsmouth on July 25-27 under the presidency of Mr. W. F. Wells. The presidential address dealt mainly with pharmaceutical legislation, incidentally directing attention to the fact that the laws regulating the practice of pharmacy in Germany and France afford better protection and greater privileges for pharmacists than the British and Irish laws. Mr. Wells deprecated the practice of Irish boards of guardians of purchasing drugs of inferior quality at competitive prices, and expressed the opinion that a large proportion of the damaged drugs imported from abroad went to public institutions, the governors of which paid more attention to price than to quality.

For the first time in its history, the meeting was this year divided into two sections, the "science section" and the "practice section." In the former section eighteen papers were contributed, the larger number of which were of purely pharmaceutical interest.

Mr. H. Finnemore and Mr. G. E. Town contributed a short note on *Bartsia odontites*, a very common wayside plant of the natural order Scrophulariaceæ. It is well known that this plant is avoided by cattle, and bearing in mind the haphazard methods in which our knowledge of the use of medicinal plants has emerged, and also the fact that plants botanically related often contain similar chemical constituents, it occurred to the authors that this relative of digitalis might possibly be worthy of pharmacological and chemical study. A quantity of the plant was extracted with alcohol, but Dr. Laidlaw, who tested the action of the solution on frogs, found that it had no poisonous or digitalis-like effect. A crystalline matter which separated from the alcoholic solution was identified as mannite.

Mr. H. J. Henderson described an experiment in peppermint culture in the shade. The plants were grown on the bank of a stream at Hitchin, and some of them reached a height of 50 inches; the stems were stout, and the leaves correspondingly large. It was found, however, that the lack of sunlight, due to the shadow cast by the trees on the opposite bank, prevented the production of the hairs bearing the oil cells, and reacted powerfully on the yield of oil, this being only 0.1 per cent. from the fresh herb. The yield of oil from ordinary plants grown on the same farm was 0.409 per cent.

Mr. E. H. Farr and Mr. R. Wright contributed a paper in which they described experiments carried out with the view of testing the accuracy of the statement, which is frequently made, to the effect that in the conversion of opium into extract or tincture the quantity of morphine shown by the official assay of a sample of opium is always greater than the amount found in the finished product. The authors find this statement to be correct. In seven samples of opium worked upon, the loss of morphine varied between the limits of 0.8 per cent. and 9.0 per cent. of the whole, with an average for the whole series of 4.78 per cent. The loss appears to be due to occlusion of the alkaloid, rendering its complete extraction by water or alcohol a matter of practical impossibility, or to some other factor which has hitherto escaped recognition.

Mr. H. Deane, in a communication on extract of Indian hemp, demonstrated the variability of this extract as supplied by the manufacturers. He suggested a modification of the official process of manufacture by which an extract consisting practically of pure resin would be obtained.

Mr. R. R. Bennett suggested that an iodine standard should be officially adopted for *Thyroideum siccum*. The majority of pharmacologists are agreed that the activity of thyroid is dependent upon the combined iodine present, but the author finds that the combined iodine present in commercial preparations varies considerably. The percentage of iodine in dry thyroid prepared from a series of sheep's thyroids obtained direct from the slaughter-house varied from 0.21 per cent. to 0.096 per cent., the average value being 0.158 per cent. The author thinks that an iodine standard of 0.15 per cent. might be adopted without unduly harassing the manufacturer.

Mr. John C. Umney contributed a note on *Podophyllum emodi*. At the request of the Indigenous Drugs Com-

mittee (Calcutta) he conducted a series of experiments upon the drug, collected under different conditions and at different seasons. He finds that the resin obtained from the rhizome collected after flowering is much richer in podophylotoxin than the sample he examined some years ago, and that it contains about twice as much podophylotoxin as the resin of *P. peltatum*.

A paper on the composition of diabetic foods, by Mr. F. W. F. Arnaud, gave rise to a vigorous discussion. The author gave the results of the analysis of twelve different samples of gluten bread and flours, the products of seven manufacturers, which showed that the products of one manufacturer alone were satisfactory. Nine of the products contained from 40 per cent. to 70 per cent. of starch. The author cannot confirm the statement, frequently made in advertisements, that the starch has been altered, either by the qualitative iodine test or the microscope. A sample of an expensive diabetic food was found to consist of ordinary flour which had merely been heated. In the course of the discussion it was suggested that the conference should take some action with a view to the repression of the sale of ordinary bread and flour as specially prepared diabetic foodstuffs, and it was finally decided to refer the paper to the executive with the object of considering whether the attention of the British Medical Association should be directed to the facts disclosed.

In a paper on white precipitate, Mr. G. D. Elsdon described a method for the estimation of mercury. He confirms the statement made on previous occasions that the sulphide method gives results that are sometimes too high, but contends that the process is, in respect to its accuracy, no worse than the others in general use, and is to be preferred on account of its speed and simplicity. He also described a method of analysing white precipitate ointment for the purposes of the Sale of Food and Drugs Acts.

Mr. H. Finnemore communicated a brief note on solution of sodium ethylate. This liquid becomes brown on keeping, the change in colour being due to the action of the alkali on the acetaldehyde present in absolute alcohol. The use of methyl alcohol in place of ethyl alcohol is suggested; a sample of solution of sodium methylate showed no trace of discoloration after two years.

Other papers read in the science section included a note on the constitution of commercial bismuth subchloride, by Mr. J. B. P. Harrison; notes on arsenates of strychnine and strychnine hypophosphite, by Mr. D. B. Dott; and a paper on the moisture and ash contents of medicinal extracts, by Messrs. K. C. Allen and T. Brewis.

In the Practice Section a paper on the education of the pharmacist was read by Dr. F. Beddow. He expressed the opinion that the present system of educating the pharmacist is not an ideal one from the teacher's point of view, since a large majority of students do little or nothing until they are old enough to sit for their final examination; they try to compress all their work into a few months, the result being a process of cramming. So far as possible, educationists would like to minimise the importance of the examination and increase the importance of the education; and in Dr. Beddow's view the proposed pharmaceutical curriculum (*NATURE*, February 23, p. 564) is a step in this direction, for it substitutes to some extent proof of education for examination.

A paper was also read by Mr. E. F. Harrison on secret and proprietary remedies, and at the close of the discussion a resolution was passed calling upon the Government to institute an inquiry into the sale of these products. The position of pharmacists under the proposed national insurance scheme was also discussed.

Sir Edward Evans was elected president for the ensuing year, and an invitation to hold the next meeting of the conference at Edinburgh was accepted.

THE SCENTS OF BUTTERFLIES.¹

AMONG all the country sights of spring, summer, and early autumn, I suppose there is none more familiar than that of the common white butterflies. They are to be seen, as we know, everywhere; haunting woods, hedgerows, lanes and gardens, crossing heaths and meadows, and visiting at times not only parks and squares, but even

¹ Discourse delivered at the Royal Institution on Friday, March 3, by Dr. F. A. Dixey, F.R.S.

streets in the heart of London. Of these insects there are in this country, as is no doubt known to many of you, three especially abundant kinds. One of these is the large cabbage white; the other two species are smaller. These two latter kinds are much alike when seen on the wing; but on a closer view they are easily distinguished, the most obvious mark of difference being the presence in one of them of greyish-green streaks, following the course of the so-called "veins" or "nervures," on the under surface of the hind wing. From this character the form in question gets its common name of the "green-veined white." If anyone will capture a male green-veined white (easily distinguished from the female by the much slighter spotting of the male's upper surface), and will brush the upper surface of the fore or hind wing with a camel-hair pencil, he will become conscious of a strong agreeable odour like that of the so-called "lemon-plant." On further examination he will find that this perfume emanates from the wings of the butterfly, and is strongly perceptible on the brush with which the wings were rubbed. The rubbing process has, of course, dislodged large quantities of the minute scales with which the wings of this insect, like those of butterflies and moths in general, are clothed; and these dust-like scales, adhering to the brush, have in some way or other carried with them the characteristic odour of the butterfly. A similar scraping or rubbing of scales from the under surface of the wings does not emit the odour, nor is it found in association with any scales from either surface of the female.

We find, then, that in this butterfly the perfume attaches to the scales in one particular situation, namely, the upper surface of the wings of the male insect. This fact obviously suggests that we should examine these particular scales in order to find out whether they present any differences from the scales which appear to be odourless. On applying the microscope to the scraping which carries the scent, we find at once an answer to our question. The great majority of the scales are of the ordinary well-known kind, consisting of an elongated flattened lamina, provided at one end with a short quill-like footstalk by which they are attached to the membrane of the wing, and frequently showing at the other extremity a more or less marked indentation. But among these will be found certain scales of an entirely different appearance. These latter scales in the insect before us are somewhat heart-shaped, carrying a long footstalk which ends in an almost circular disc, and tapering at the other extremity to a point. But the greatest peculiarity of these special scales is to be found in the plume-like structure which crowns their apical portion. Under a low power of the microscope the appearance is that of a tuft of fine transparent hairs, strongly suggestive of the vibratile cilia which are so familiar in animal and vegetable histology; but these hair-like processes, unlike the cilia, have no faculty of active movement, and under a high power they bear rather the aspect of minute tubes, in many cases seeming to be open at their free extremity. On examining a similar scraping from the under surface of the male, or from either surface of the female wing, we find only scales of the ordinary kind; the special "plume-scales," as they have been called, being invariably absent. Inasmuch, then, as the characteristic fragrance is found only in scrapings which contain the plume-scales, we are justified in concluding that these remarkable structures act as carriers of the perfume.

So far we have considered only one species of butterfly, the common green-veined white; but the question will naturally be asked—what about other butterflies, the other common whites, for example? Is this flowery perfume a peculiarity of one species only, or is the property of emitting a fragrant odour shared by other related insects? In order to answer this question, let us suppose that we make a series of trials on the second species of smaller common white, the small cabbage or garden white, as it is usually called. Here, again, no trace of a flowery odour is discoverable in the female or in scales from the lower surface of the wings in the male; but, as before, the upper surface of the wings in the latter sex will be found to be scented, and, also as before, the scent will be found to adhere to the scales removed by scraping or brushing from the upper surface. Examining the scented scraping microscopically, we find that here, too, are a number of plume-scales mixed in with scales of the ordinary type. These