modifications of the teeth and skull architecture in herbivorous and carnivorous mammals.

FOOD CHEMISTRY

Finding Unpleasant Flavours

from a Correspondent

THE gaps in knowledge about the non-volatile precursors of aroma volatiles could keep the average university chemistry department happy for many years to come. This was the message from a symposium on flavour-contributing substances in food formation, composition and assessment held by the Food Group of the Society of Chemical Industry in London on September 24.

P. A. T. Swoboda (Food Research Institute, Norwich) described the work leading to the identification of dimethyl trisulphide as a constituent of roast chicken aroma. The component is present only to the extent of approximately 1 μg in 100 g of meat (1 in 10^8), but the flavour, described as cabbage-like by some, could be detected at one part in 10^{10} of water. A. J. MacLeod (Queen Elizabeth College, London), discussing the flavour volatiles of cooked cabbage itself, emphasized the importance of being fully aware of the complete history of any vegetable subjected to flavour analysis. He explained how even slight variations in growing conditions, post-harvest treatments and cooking methods could radically affect the produced volatiles. It is therefore not sufficient, except in the very simplest of qualitative analyses, to quote results for a foodstuff of unspecified origins and treatments.

R. L. S. Patterson (Meat Research Institute, Langford) and N. M. Griffiths (Food Research Institute, Norwich) described the work leading to the determination of boar meat taint as 5α-androst-16-en-3-one. The presence of this steroidal aroma component renders the meat objectionable, particularly during cooking, although this is not necessarily the case afterwards. The most interesting fact about this steroid taint is that although nearly all women tested could detect the odour (92·4 per cent), only about half of the men could (55·7 per cent). Furthermore, men mostly found the odour to be neutral or at worst slightly unpleasant, whereas women generally found the steroid to have a very unpleasant odour. The odour was described as sweet in dilution but sweaty and of urine when more concentrated. Such extensive sex differences in odour sensitivity and interpretation have not been observed before. D. G. Land (Food Research Institute, Norwich) made a plea for the greater use of the sensory evaluation of flavour constituents and described his methods for odour characterization using the human nose by sniffing the emerging separated volatiles at the exit ports of a gas chromatograph.

A lively discussion centred mostly on the problems of sensory evaluation and odour characterization. There was debate about the value of such work at present, particularly when so many factors such as odour interactions, dilution effects and even the physiology of the perception of flavour itself are not understood. At the end one was left with nothing but admiration for those grappling with the deeper problems of sensory evaluation; but, bearing in mind all the papers presented on the subject, this was tinged with the suspicion that as yet there are so many unanswered problems that any deductions relating to the applicability of such results must be made with extreme care. It must be accepted, however, that flavour is a subjective problem and simple chemical analysis on its own can never supply the complete answer in this respect.

One thing with which all were in complete agreement was the request by H. E. Nursten (Procter Department of Food and Leather Science, Leeds) for more financial support and better facilities for flavour research, and when these are more extensive perhaps many of the problems highlighted by this valuable symposium may be solved.

PARTICLE PHYSICS

Interacting Electrons and Photons

from a Correspondent

DARESBURY'S 4–5 Gev electron synchrotron was the star attraction at the conference on electron photon interactions held at the University of Liverpool from September 14 to 20. NINA, however, is comparable with several other facilities in the world and is not an advance in energy or intensity, so that contributions from Daresbury, although well represented, did not as in previous years dominate the meeting.

A successful departure from customary practice was the elimination of contributed papers, which were replaced by rapporteur summaries. The conference covered the traditional topics, quantum electrodynamics, strong interaction electromagnetic processes, the vector dominance equivalence of photons and vector mesons, elastic and inelastic scattering of electrons. Unfortunately, because the new Frascati 1·5 Gev positron electron storage ring facility has been paralysed by a strike of the technical staff for the past three months, the hoped-for results from this machine were not available. The Orsay and Novosibirsk storage rings had continued to make substantial but not sensational progress since their last reported results at the Vienna conference a year ago.

H. Harari (Weizmann Institute) discussed photoproduction processes as a test of current strong interaction theories. For small four-momentum transfers, photoproduction processes seem to be very sensitive to the nature of the exchanged particle. At intermediate momentum transfers, the processes throw light on the nature of the so called "nonsense zero" dips; at high momentum transfer values the processes seem to become "statistical" in nature and demonstrate close similarities. Considerable scepticism was expressed as to the existence of "nonsense zeros", and most high energy theorists seem to be turning to theories without "nonsense zeros" and involving cuts or absorption.

Vector meson photon equivalence as usual came in for its share of heated discussion. It was universally agreed that it provides an excellent semiquantitative guide, but few physicists still maintain that it is exact. Discussion on the experimental determination of $\gamma c^2/4\pi$ by measurements of coherent production of rho-mesons on complex nuclei gave rise to some bitter exchanges, and the experimentalists concerned were unable even to agree as to what they disagreed about.

Considerable experimental progress had been made

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