Embryonic 'cold nose'

from a Correspondent

ANYBODY who opens a boiled egg at the blunt end will know there is an air space between the shell in this region and the rest of the egg contents. The usual explanation given for the function of this space is that it serves as a region for respiratory exchange between the embryo and the outside world; furthermore, the chick punctures the air space with its beak before hatching—a procedure which initiates respiration though the lungs and thus prepares the chick for its life outside. An additional function, which experiments on eggs of the domestic fowl and Japanese quail support, has recently been proposed by Simkiss (*J. Zool., Lond.*, **173**, 225; 1974). He argues that since loss of water by evaporation is one of the main problems associated with the development of an embryo in a closed or 'cleidoic' egg, any measure which limits such a loss would be of value.

When the parent bird is sitting on the nest the temperature of the egg and the humidity of the surrounding air are both kept high so there is little loss of water vapour. But when the parent leaves the nest—and many birds are off the nest for periods of 5 to 15 minutes, 20–40% of the day—the temperature and humidity of the air surrounding the egg fall rapidly and, because the watery contents of the egg cool only slowly, there is a concentration gradient for water vapour to pass out of the egg; this loss of water from a warm wet body to cool dry air only stops, of course, when the parent returns or if the egg cools completely. The basis of Simkiss's argument is that the air held in the air space, because it has a low specific heat, cools rapidly when the parent leaves the nest thus reducing the gradient for the loss of water vapour through the shell. He estimates that in the climatic conditions of Britain the loss of water vapour per unit area of shell is 50% greater in those regions which overlie the liquid egg contents than in the region of the air space; with the air space region occupying about 40% of the area of the shell, he calculated a saving of about 15% during the period when a parent is not sitting.

It is, as Simkiss admits, difficult to assess whether this water-conserving effect of the air space was more or less important in evolution than the respiratory advantages. Nevertheless, the comparative physiologist may well be able to throw light on the relative importance of the proposed functions, for one can think of climatic conditions in which some species breed but in which an air space would be of no advantage in water conservation, and species in which the egg is always kept warm by the parent.

Lasers probe the hydrogen atom

from B. P. Kibble

THE Doppler effect, which causes the apparent alteration in wavelength of the light emitted by moving atoms, has always limited the accuracy with which spectral line wavelengths, particularly those of atomic hydrogen, could be measured. But now this limitation has been overcome by saturated absorption techniques using lasers whose light can be tuned over a range of wavelengths. The first accurate measurements of a line in the hydrogen spectrum are reported by Hänsch and his colleagues at Stanford University in a recent issue

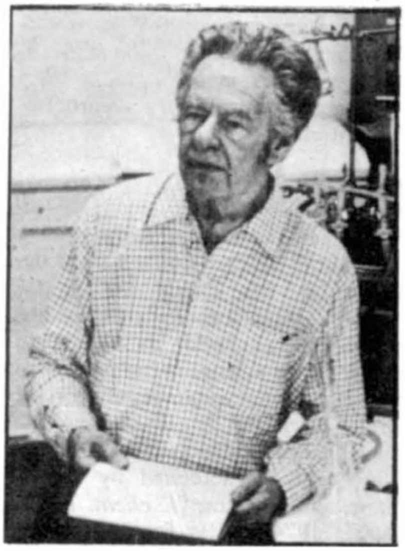
Lipmann's birthday party

from a Correspondent

THE name of Fritz Lipmann is such a commonplace in textbooks of biochemistry that many students of basic science may well be surprised to learn that, unlike Dalton and Archimedes, he is still alive and has in fact just celebrated his 75th birthday. To mark this event, eighty of his former students and colleagues attended a special symposium organised in his honour at the Max-Planck-Institut für Molekulare Genetik in Berlin-Dahlem, on July 7-9, to take part in a relaxing mixture of history, sentiment and science.

The Institut für Molekulare Genetik was an appropriate venue, for it was literally only a couple of hundred yards away that Lipmann's career really began, as an unpaid graduate student in the old Kaiser-Wilhelm-Institut in Dahlem. The institut, founded in 1910, had somehow managed to survive both the First World War and the German hyperinflation of the early 1920s, when Lipmann joined Meyerhof's laboratory there in 1927. At that time, the institut, which was of course the forerunner of today's Max-Planck-Institut, was quite a small organisation and Lipmann and his contemporary Sir Hans Krebs gave an entertaining account of life there in the late 1920s, under the "benevolent dictatorship" of Meyerhof and Warburg, two rather forbidding characters. For instance, Sir Hans was advised on leaving the institut to take up another career, as his "chances of success in biochemistry were slight".

In 1930, Lipmann, with his wife and three years of postgraduate experience, set out for America to take up a one-year fellowship at the Rockefeller University. After that he worked for a few years in Copenhagen before returning to the United States to settle. First in Boston and later at the Rockefeller University, he proceeded to pour out his classical work on protein phosphorylation, "energy-rich bonds", coenzyme A, and a host of other topics. This diversity of interest was reflected in the scientific sessions of the symposium, in which the Lipmann alumni discoursed on subjects ranging from bioenergetics to immunity in insects, and from ribosome structure to molecular biology in the reign of the Chinese Emperor Fu Hsi. The only common feature was the warmth of the tributes which



Fritz Lipmann

all the speakers paid to their former mentor. Finally a special lecture was given by Feodor Lynen of the Max-Planck-Institut für Biochemie on the isolation and characterisation of the biotin enzymes. This was the first 'Fritz Lipmann Lecture', a new event in the academic calendar, which will now be given annually in Germany as part of the programme of the Gesellschaft für Biologische Chemie, under the sponsorship of the Boehringer-Mannheim Corporation.