

matters arising

Douc Langurs

SIR.—Relevant to Dr Kavanagh's observations (*Nature*, 239, 406; 1972) of food sharing among captive douc langurs (*Pygathrix nemaeus*), I should like to describe some of my own observations of these monkeys in the wild. Between May 1967 and May 1968, I made fourteen visits to Mount Son Tra (elevation 696 m above sea level), about 10 km north of Da Nang on the northeast coast of South Viet Nam. Here I watched two groups of douc langurs as they fed in the canopies of the trees which they inhabited. At the time the animals were relatively tame, benefiting from partial protection afforded by being on a military base, but recently they have declined on Son Tra (Van Peenan *et al.*, *Mammalia*, 35, 127; 1971). The first groups consisted of four adults, apparently one male and three females (distinguishable when external genitalia were visible), and a baby. The second group consisted of five adults (apparently two males and three females), a half-grown monkey and a baby. The members of a group foraged in close

proximity, usually within 10 m of each other, although not always in the same tree, and they rarely came to the ground. Often two or three animals fed in the same terminal clump of foliage, and occasionally when one pulled down a branch, an adjacent individual also fed on it. This type of passive food sharing was noted by Kavanagh.

I also observed active food sharing on two occasions. In the first group of langurs an adult female bit a small section of leafy twig and passed it to the male who quickly stripped off and ate the leaves. The two animals continued to forage within 2 m of each other, but no further interaction was noted for about 30 min. Then, however, the female solicited copulation from the male who subsequently mounted her, but the animals were disturbed by a passing vehicle before intromission was achieved, and they disappeared from view. In the second group I saw a similar case of food being passed from an individual of unknown sex to a female who had a baby clinging to her. I observed no further inter-

action between these two animals in the few minutes before they disappeared in the foliage.

In each case the passing of food seemed to be spontaneous. The recipient did not appear to threaten or beg, although as Kavanagh pointed out there may be subtle communication patterns inapparent to the human observer. Further observations of these animals in the wild may reveal, as Kavanagh suspected, that food sharing is not rare in family groups in natural conditions. I should add that the species is endemic to the Indochina Region, including Hainan Island, where much of its environment has suffered profound changes, and it is considered an endangered species¹.

Yours faithfully,

MICHAEL GOCHFELD

*Division of Environmental Health Sciences,
Columbia University School of Public Health,
New York, New York 10032*

¹ *Red Data Book: Mammalia* (IUCN, Morges, 1972).

obituary

Frederick James Dent

FREDERICK JAMES DENT, FRS, OBE, leader of the 1971 MacRoberts Award winning team, died on October 5 at his home in Malta after a short illness. He was 67.

Dr Dent was born in 1905 and was educated at the Modern School, Leeds. He was a student at the University of Leeds under Professor J. W. Cobb, CBE, obtaining his doctorate in 1929 for an original piece of work on the carbon steam reaction. In the same year he was appointed research chemist in charge of gas production investigations carried out by the Joint Research Committee of the Institution of Gas Engineers and the University of Leeds. In this period he conducted a classical study of the water gas process on the full scale which led to a detailed laboratory investigation of

the gasification of coal in steam and oxygen at high pressure.

It was during this latter work in 1937 that he discovered that methane produced during gasification under pressure was formed by the direct action of hydrogen on the coal substance. During this same period he carried out a study of the catalytic synthesis of methane from carbon monoxide and hydrogen and identified and solved the problems associated with the application of this reaction to the production of town gas. Both these discoveries, the one relating to coal hydrogenation and the other to methanation, have currently enormous significance in the work going on today in the United States to counter the growing natural gas shortage by the gasification of coal to methane as a substitute for natural gas.

On the day of his funeral the success-

ful start-up of a methanation demonstration plant at the coal gasification plant of Scottish Gas, at Westfield, was announced in the press. The previous week this plant, the essential features of which are directly based on Dent's work, produced the first substitute natural gas from coal on a commercial scale, fore-running new plants in the United States which will produce billions of cubic feet of synthetic natural gas per day in the future. The new generation of processes now being developed in the United States for the production of substitute natural gas will practically all also incorporate the coal hydrogenation reaction which he discovered at Leeds and first demonstrated on a pilot plant scale at the Poole Research Station of the Gas Research Board.

It was at Poole, where he was Assistant Director of the Gas Research Board