

**RESULTS OBTAINED WITH AEROSOLS IN THE MONKEY HOUSE OF
THE ROYAL ZOOLOGICAL SOCIETY OF IRELAND, DUBLIN.
(1949—1953).**

By JOHN MCGRATH.

THE Monkey House in the Zoological Gardens in Dublin entertains usually a gathering of about forty monkeys, gibbons and chimpanzees. These are housed in some seventeen cages which are built around a large central hall. The cages open through small doors into external enclosures, separate for each cage, to allow the inhabitants free access to the fresh air in suitably warm weather.

The health of the monkey house population varies, but for many years there was an undesirable and troublesome incidence of upper respiratory infections. This became more marked in 1946, when it was unfortunately accompanied by a number of cases of tuberculosis. Almost certainly the infections were introduced by the human visitors to the house.

In an endeavour to protect the health of the animals the use of Aerosol disinfection was begun in February, 1949, and has continued since that date. The apparatus was that rented by Aerovap, Ireland, Ltd., and at first resorcinol was employed, later hexyl-resorcinol. The results during the four years 1949-1952 were striking, in that respiratory infection became almost unknown, although the general mortality was not at all affected. The results are shown in Table A. No case of tuberculosis has occurred since the installation of the apparatus.

TABLE A
MONKEY HOUSE POPULATION, 1947—1953.

Year	1947		1948		1949		1950		1951		1952		1953	
	Beginning	Arrivals	Beginning	Arrivals	Beginning	Arrivals	Beginning	Arrivals	Beginning	Arrivals	Beginning	Arrivals	Beginning	Arrivals
Chimpanzees		2	2		2	4	4	3	6	2	6		5	
Gibbons ...		4	4		4		2	3	1	4	3	2	5	
Monkeys ...	14	16	24	6	24	5	30	8	36	5	28	3	25	
TOTAL ...	14	22	30	6	30	9	36	14	43	11	37	5	35	
Mortality ...		6		6		3		7		17		7		

9, 2, 1949—Aerosols installed.

General Effects of Aerosols, Resorcinol and Hexyl-resorcinol.

Realisation of the lethal effects of Aerosols of this type on the bacterial cell induces caution in its continuous use in rooms and other enclosed spaces regularly occupied by the same human population. Possible injurious effects of the admittedly very minute amounts of the Aerosol when continuously breathed over long periods (extending perhaps to many years),

have to be carefully considered : e.g., inflammatory or fibrotic changes or even carcinogenesis. The reactions might also possibly affect the eyes or skin or appear as forms of allergy or hypersensitivity. It was therefore apparent that careful detailed examination of the animals in the monkey house which had lived practically continuously in the Aerosol atmosphere would be of great interest and some significance—particularly the examination of the lungs.

During the period of exposure, which in the case of many of these animals now runs up to four and a half years, no untoward effects were noted in the eyes, skin, or respiratory or digestive systems in any of the animals.

Post-mortem Examinations :

Because of unpleasant habits it became necessary in November, 1952, to destroy (by humane killer) two of the animals, which had been exposed to Aerosol inhalation for from three to three and a half years. By fortunate arrangement it was possible for Dr. R. E. O. Williams of the Central Public Health Laboratory, London, to carry out the postmortem examinations and the subsequent detailed examination of the organs. Dr. Williams kindly furnished a preliminary report (personal communication) which read as follows :—

“ All the monkeys showed signs of emphysema and collapse in the lungs ; and two showed considerable peribronchial lymphoid tissue. The bronchial mucosa appeared quite normal, but the trachea of one animal showed some lymphocytic and plasma cell infiltration. The spot-nosed monkey had a roundworm infestation of the lungs. No obvious abnormalities were found in the sections of liver or kidney.

“ I understand that lymphocytic infiltration of the tissues is rather common in monkeys and I presume that it should not therefore be regarded as abnormal. It does not seem that the lungs showed any lesions that could be specifically attributed to the inhalation of the resorcinol.”

Summary.

1. Aerosols (resorcinol, and hexyl-resorcinol, Aerovap, Ireland) have been used in a closed monkey house over a period of four and a half years.

2. Following the introduction of the apparatus respiratory infections almost disappeared, and there has been no case of tuberculosis.

3. No untoward effects attributable to the use of the Aerosols were observed in general examinations, nor in postmortem examination on two of the animals.

NOTE.—It should be noted that this experience with Aerosols is of relatively short duration, and it was not feasible to arrange for proper controls. The observations outlined above are, therefore, of only strictly limited value in assessing either the degree of beneficial effect or the possible untoward results which might attend the continuous use of such Aerosols in the case of groups of persons.
