We thank the Medical Officer-in-Charge for facilities at the Royal Naval Hospital, Haslar. The prostaglandin $F_{2\alpha}$ was supplied by Dr R. G. Jacomb, Upjohn Ltd, Crawley, Sussex.

J. H. CUMMINGS
A. NEWMAN
J. J. MISIEWICZ

Medical Research Council,
Gastroenterology Unit,
Central Middlesex Hospital,
London NW10 7NS

G. J. MILTON-THOMPSON
J. A. BILLINGS

The Royal Naval Hospital,
Haslar,
Gosport,
Hampshire

Received December 19, 1972; revised January 25, 1973.

1 Williams, E. D., Karim, S. M. M., and Sandler, M., *Lancet*, i, 22 (1968).
2 Karim, S. M. M., and Filshei, G. M., *Lancet*, i, 157 (1970).
3 Misiewicz, J. J., Waller, Sheila L., Kiley, Nancy, and Horton, E. W., *Lancet*, i, 648 (1969).
4 Matuchansky, C., and Bernier, J. J., *Gut*, **12**, 854 (1971).
5 Al-Awquati, Quais, and Greenough III, W. B., *Nature*, **238**, 26 (1972).
6 Pierce, N. F., Carpenter, jun., C. C. J., Elliott, H. L., and Greenough, W. B., III, *Gastroenterology*, **60**, 22 (1971).
7 Bennett, A., Murray, J. G., and Wylie, J. H., *Brit. J. Pharmacol. Chemotherap.*, **32**, 339 (1968).
8 Bennett, A., Eley, K. G., and Scholes, G. B., *Brit. J. Pharmacol.*, **34**, 630 (1968).
9 Bennett, A., and Posner, J., *Brit. J. Pharmacol.*, **42**, 584 (1971).
10 Vanasin, B., Greenough, W. B., III, and Schuster, M. M., *Gastroenterology*, **58**, 1004 (1970).
11 Cooper, H., Levitan, R., Fordtran, J. S., and Ingelfinger, F. J., *Gastroenterology*, **50**, 1 (1965).
12 Dillard, R. L., Eastman, H., and Fordtran, J. S., *Gastroenterology*, **49**, 58 (1965).
13 Hyden, S., *Ann. Agric. Coll.*, **22**, 139 (1955).
14 Banwell, J. G., Pierce, N. F., Mitra, R. C., *et al.*, *J. Clin. Invest.*, **49**, 183 (1970).
15 Banwell, J. G., Gorbach, S. L., Pierce, N. F., Mitra, R., and Mondal, A., *J. Clin. Invest.*, **50**, 890 (1971).
16 Waller, Sheila L., Misiewicz, J. J., and Kiley, Nancy, *Gut*, **13**, 805 (1972).

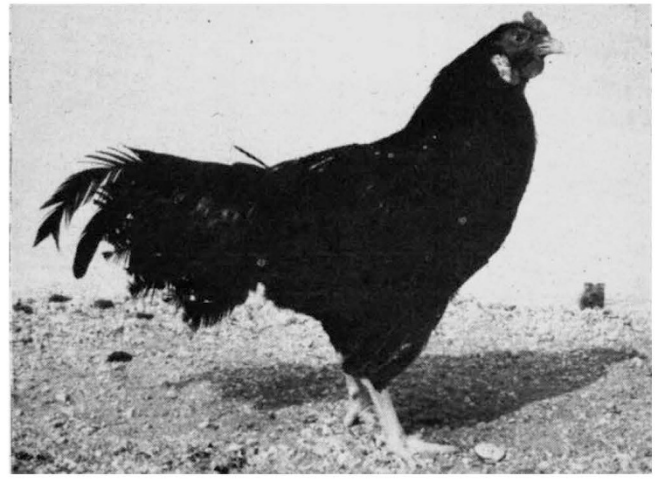

Fig. 1 Adult diploid parthenogenetic rooster.

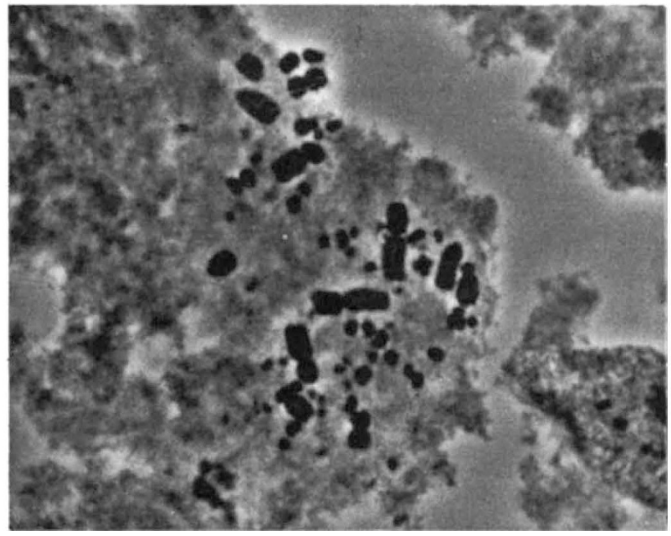

Fig. 2 Diploid cell from a parthenogenetic embryo. Note the ZZ chromosomes.

Adult Parthenogenetic Chickens

PARTHENOGENETIC chickens have been reported as embryos or chicks that lived to a maximum of eight days[1–3], except for one triploid White Leghorn chicken[4]. This chicken was from a virgin White Leghorn hen being tested as a control for a Dark Cornish-type stock which was under genetic selection for a high rate of parthenogenetic development. A cytogenetic study is in progress to determine the origin of parthenogenesis and to obtain parthenogenetic chickens.

In 1972, four parthenogenetic chicks were hatched from 8,532 eggs of the Dark Cornish-type stock[5] and raised to maturity. Three other chicks were hatched, but died during the first week. Average time to hatching was 24.4 days. These eggs were laid by virgin hens, sexed at six weeks of age and placed in separate pens. When the hens neared reproductive age they were placed in individual cages. No males were kept in the same room as the virgin hens. Special care had to be given to these chicks because they seemed to die as a result of gaseous inflated intestines, suggestive of enterotoxaemia. Therefore, as soon as the chicks started to pip the holes were enlarged and they were fed orally a mixture of 2,000 units of penicillin and 1 mg streptomycin each day for three days. The chicks were allowed to hatch normally the next day or were helped out of the eggs if they had difficulty. Some chicks had to be hand fed for the first two or three days. After this time, they were strong enough to feed themselves.

Four Dark Cornish-type chickens (Fig. 1) survived this treatment, and reached maturity. These birds are males and one mated with a White Leghorn female to produce fertile eggs. Chromosome counts from the feather pulp showed this male was diploid. Two of the other birds are also diploid. Fig. 2 shows a somatic cell from a colchicine-treated parthenogenetic embryo. The hen that laid this egg also laid an egg giving rise to one of the parthenogenetic roosters. The cell is diploid, and both ZZ chromosomes are present as they were in the parthenogenetic roosters that were raised. These are the first examples of adult diploid parthenogenetic chickens.

PATRICIA SARVELLA

Animal Physiology and Genetics Institute,
Agricultural Research Center,
Agricultural Research Service, USDA,
Beltsville, Maryland 20705

Received December 4, 1972.

1 Kosin, I. L., Sato, I., and Nagra, H., *Avicultura Moderna, Memoria del XI Congreso Mundial de Avicultura*, 49 (La Presna Medica Mexicana, 1962).
2 Olsen, M. W., Marks, H. L., and Wilson, S. P., *J. Hered.*, **59**, 67 (1968).
3 Zartman, D. L., *Poul. Sci.*, **51**, 803 (1972).
4 Sarvella, P. A., *J. Hered.*, **61**, 215 (1970).
5 Olsen, M. W., *J. Hered.*, **57**, 23 (1966).