to disagree with this, but it seems appropriate to us and its meaning has been clearly defined.—We are, etc.,

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I.U.D. and Hydrometra

Sir,—Hydrometra gravidarum is a rare syndrome. I should like to report a case in which the contributory factor was an intrauterine contraceptive device, an association which has not previously been reported.

The patient conceived in spite of a Grazafen ring which had been inserted two years previously. When some eight weeks pregnant she developed vague lower abdominal pain which resolved slowly over the next three weeks without growing satisfactory. An ultrasound examination at this time demonstrated an intrauterine pregnancy but failed to show the ring.

At a gestation of 22 weeks she developed a profuse watery vaginal discharge. The size of the uterus was compatible with her dates and the cervical os was tightly closed. The fetal heart was clearly audible and regular. From then on a watery fluid drained intermittently and in great quantity. It was alkaline and glucose free, but contained substantial quantities of protein. No fetal cells could be seen. An abdominal X-ray showed a normal fetus with a cephalic presentation. The ring was lying below the fetal head and above the internal os. She remained well until 32 weeks and fetal growth was good, but she then developed some pink staining of her discharge which was shown to be blood. A placental scan showed a grade I anterior placenta previa.

Uterine growth continued and serial oestriol estimations were satisfactory until 35 weeks gestation when she developed some painless vaginal bleeding, despite which the placenta remained intact and the cervical os closed. The fetal heart was audible and regular and this was confirmed by a fetal electrocardiograph which showed no evidence of hypoxia. Bleeding continued throughout the day and so caesarean section was done.

On incision of the lower segment a bloody clot was seen from which protruded the broken Grazafen ring. This was lying at the lower edge of the placenta, which had partially separated. The membranes were intact and there was no evidence of amniotic fluid weighing 2·31 kg was delivered. The oevis was normal apart from some fibrinous adhesions surrounding the right fallopian tube and ovary. Subsequent progress of mother and child was satisfactory and no undue vaginal discharge.

Moir suggests4 the hydrometra gravidarum represents a failure of fusion of the decidual vera and the decidua capitis. One patient is mentioned who had this complaint in three successive term pregnancies. Paalman and Veer2 reported a series of 41 cases in which 11 (28·6%) had an associated placenta circumvallata and nine had a history of bleeding in early pregnancy. They felt that the fluid probably resulted from partial stripping of the membranes.

These reports and the present case suggest that hydrometra gravidarum is caused by some irritant of the membranes which the decidua, probably blood but possibly a foreign body. In the present case it may be that the collection of fluid was lying just below the placental margin and thus causing slight placental separation yet one more hazard of the intrauterine contraceptive device.—I am, etc.,

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1 Kerr, J., Munro, Operative Obstetrics, p. 252 8th edn. by J. Chaytor Moir and P. Myrteczouch.

Prognostic Factors in Asthma Deaths

Sir,—In suggesting causes of the recent epidemic of deaths among asthmatics both your leading article (25 November 1972, p. 443) and Hersheimer4 have overlooked the strong possibility that the propellant used in aerosol cans for dispensing medication may have been a contributor. Some of these aerosol propellants have been implicated in sudden deaths due to "aerosol sniffing",5 6 and one aerosol product (Pertussin) has been banned in the United States because of associated sudden deaths. Various halogenated hydrocarbons (haloalkanes), isobutane, propane, vinyl chloride, and other agents have been used as propellants in aerosol cans.5 7 8 Probably all of them have been used in preparations for inhalation by asthmatics. Some of these agents, notably some of the haloalkanes, have been shown to be associated with cardiac arrhythmia and ventricular fibrillation as well as other effects in animals.4 9 10 In one human experiment, premature atrial and ventricular contractions were noted after haloalkane and isoproterenol inhalation.10 In some of these experiments, it was thought that the agent simply sensitized the heart to anoxia or to exogenous adrenergic agents,12 but subsequent experiments have shown cardiac effects without either anoxia or exogenous adrenergic agents.12 13 14 In addition, "aerosol sniffing" deaths have occurred from aerosols containing no adrenergic agents.2 15 16 17 Both anoxia and adrenergic agents, however, enhance the cardio toxicity of the haloalkanes.9 10 11 Stolley focused attention on the high concentration of isoprenaline in some of the preparations for asthma, and showed that excess asthma deaths occurred in those countries that had used the "high concentration" preparations.11 Hersheimer pointed out that isoprenaline is not cardio toxic, and pointed out some discrepancies in the distribution of excess asthma deaths which Stolley's hypothesis failed to explain.1 He went on to attribute the excess deaths to inadequate medical management.18 Unfortunately, this hypothesis is even less adequate than Stolley's in explaining the distribution of excess asthma deaths.19 It cannot account for the rise in asthma deaths during the time period which accompanied the introduction of the pressurized aerosol asthma preparations in England,11 19 and the fall in the death rate after an official warning about use of pressurized medication by asthmatics was issued.17

Although several investigators have argued that asthmatic aerosol preparations are safe when properly used,2 10 19 it appears likely that in individuals, asthma, hyperpnoea, adrenergic agents and certain aerosol propellants could produce cardiac arrhythmias and lead to sudden death. In either hypoxia or concentration of adrenergic agents would probably increase the likelihood of ventricular fibrillation from these preparations.

The associations noted by Stolley1 may have been with a preparation which accidentally contained high concentrations of adrenergic agent with a haloalkane or other toxic of the propellants. Other combinations of aerosol propellant and adrenergic agent could readily account for the spotty distribution of excess deaths noted by Hersheimer.—I am, etc.,

VICTOR E. ARCHER

13 Stolley, P. D., American Review of Respiratory Disease, 1972, 105, 883.
14 Harris, M. C., Annals of Allergy, 1971, 29, 250.
15 Harris, M. C., Lancet, 1966, 1, 1042.
18 Sjogren's syndrome. This authors demonstrated that excess deaths in four of six patients with the syndrome reported by Dr. Rooney and colleagues may be keratoconjunctivitis sicca this is surely of importance in discussing the significance of the demonstrated hypergastrinemia. As this was the conclusion of the very preliminary report one wonders whether a further paper is already in preparation describing the results of gastric assays in patients with Sjogren's syndrome? Should this be the case the authors may care to note that among the many prescient "objectives for further