The anti-*S* titre of the serum rose from 1 : 1 three days before delivery to 1 : 16 three weeks after delivery, and by six weeks *post partum* had fallen to 1 : 8. The antibody was active at 37° C. and 20° C., though slightly more intense reactions were obtained at 37° C. The thermal range and the familial incompatibility of *S* groups suggest that this is an immune agglutinin, though the presence of the anti-*D* agglutinin (titre 1 : 16) does not allow of any evaluation of the part it may have played in fœtal morbidity. It is unlikely that the agglutinin has been previously encountered in this laboratory, as the donor of the *Rh* negative cells which were first found to be agglutinated by this serum has been one of the standard *Rh* negative controls for antibody investigations since 1943.

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Variations in Spermatogenesis of Oligospermic Men

Zondek, Bromberg and Polishuk have suggested[1] that oligospermia in men can be divided into two types, constant and periodic; and that it is only men in the latter group who are likely to produce pregnancies. While agreeing that individuals differ in the range of variation of their sperm counts, we do not think this is either a clear-cut or a useful distinction.

It is, of course, impossible to draw conclusions about the reaction of a patient to treatment for oligospermia unless several specimens have been examined before treatment is given. It is also essential that specimens for comparison should have the length of the period of abstinence since the previous ejaculation controlled in both directions. Zondek *et al.* give only a minimum of length of interval. An interval of two or three weeks may result in sperm counts five times as high as those obtained after three to five days. As the number of motile spermatozoa does not increase with a long interval to anything like the same extent as does the total number of spermatozoa present, and as their viability is frequently impaired, the increase in sperm density cannot be regarded as improving the chances of fertilization. A possible cause of apparent periodic oligospermia is the occasional loss of the first few drops of the ejaculate, the majority of the spermatozoa being in the first fraction[2]. In our experience this is often the cause, when men, whose sperm density is usually more than 60 million per c.c., produce specimens with counts less than 20 million.

It is not necessary to postulate periodic, as opposed to constant, oligospermia to explain pregnancies in wives of oligospermic men. The lower limits of sperm count usually stated as necessary for fertilization are definitely too high. In a series of more than seven hundred sub-fertile marriages, seven women whose husbands constantly had sperm densities less than 20 million per c.c. have conceived. Details are given in the accompanying table. In cases II–V conception took place shortly after the last semen analysis; in case I the last count was done a month after conception occurred. Cases VI and VII are less convincing, as conception did not take place until more than a year after the patients stopped attending the clinic, and the husbands may have improved in the interval. A further seven conceptions occurred in women whose husbands had, in a single seminal analysis, sperm densities less than 20 million per c.c.

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Relation Between Fountain Pressure and Heat Current in Helium II

Allen and Reekie[1] directed attention to the fact that the fountain-pressure difference ΔP at the ends of a narrow slit or capillary produced by a temperature difference is, in the absence of mass flow, exactly proportional to the heat current W appearing simultaneously with the fountain pressure.

For very narrow slits (up to 10^{-4} cm.) the heat current is proportional to the temperature difference at all temperatures up to the immediate neighbourhood of the λ-point. For wider slits (greater than 10^{-3} cm.), the linear relation between heat current W and temperature difference ΔT changes gradually over to proportionality between W and the cube root of ΔT. These deviations from linearity are greater for wider slits, and for higher temperatures and greater gradients at any constant slit width.

Keesom and Duyckearts[2] and Mellink[3] confirmed that the Allen–Reekie proportionality between fountain pressure ΔP and heat current W is retained no matter what the relation between W and ΔT, including the regions where this dependency approaches the cube root law.

This is difficult to understand so long as the factors responsible for the deviation from linearity between W and ΔT are regarded as operative in the slit itself where the fountain pressure gradient must exist.

A simple explanation can be given in terms similar to the model proposed recently[4] for the anomalous mechano-caloric effects in the super-critical mass flow of helium II through slits.

The experimental arrangement for measuring W and ΔP may be represented schematically as in the accompanying figure.

A narrow slit of from 0·1 to 20 μ, or a capillary filled with emery powder, connects two temperature

Case	Sperm densities (M./c.c.)	Corresponding interval since previous ejaculate (days)
I	0·4, 1·0, 0·1, 0·2	3, 3, 3, 3
II	5, 3, 5, 4, 5, 10, 2, 5	3, 4, 3, 7, ?, 13
III	10, 6·5, 6·5	5, 4, 2
IV	8, 2	11, 3
V	6, 5, 17	2, 8
VI	1·5, 0·5	28+, 2
VII	1·5, 1·5, 1·0, 2·0, 0·65	?, 8, 4, ?, 4