be possible to stimulate the host cell to produce its own. There are a number of substances that can be used for this purpose, but none has been accepted for general use in man because of toxicity or undesirable side effects.

The common cold has so far resisted immunological control. Common cold virus can present such a spectrum of antigens that production of a vaccine containing enough antibodies to neutralize them all is impossible.

The report makes several suggestions about the need for further research, especially in tropical epidemiology and respiratory virus diseases in animals. Such diseases may serve as "models" of similar ailments in man.

ORAL CONTRACEPTIVES

Hormones and Coagulation

from our Medical Biochemistry Correspondent

THE relation between female sex hormones and blood coagulation is proving to be complicated and interesting. There is now good evidence that the oestrogenic component of the oral contraceptive pill is that responsible for the increased incidence of thromboembolism in women taking these preparations. Statistical surveys last year showed no difference between different oral contraceptives in the incidence of thromboembolic complications. Only two oestrogenic compounds, but several different types of progestogens, are used in the pills so that different preparations would be expected to differ in their effects if the thromboembolism were caused by the progestogen. In addition, Daniel *et al.* (*Brit. Med. J.*, i, 801; 1968) have shown that increased factor IX activity on treatment with stilboestrol might account for an increased risk of thromboembolism in puerperal women whose lactation is suppressed by the artificial oestrogen stilboestrol.

Poller *et al.* (*Brit. Med. J.*, i, 554; 1969) have shown that low-dose progestogen oral contraceptives do not have the same effects on blood coagulation as the combinations in use. They carried out five coagulation tests on the blood of seventy-six women before, and at monthly intervals during, the use of chlormadinone acetate as a contraceptive. Half the women had already taken combined oral contraceptives for some time, and the others had never done so. This second group showed no significant changes in any clotting tests or specific coagulation assays, thromboelastography or platelet aggregation during the first three treatment cycles, but from the second month onwards there was a significant shortening of clot lysis time. Among women who had previously taken conventional oral contraceptives, prothrombin times were significantly shortened and there were increases of factors VII and X. By the second month, the prothrombin time was normal and by the third month concentrations of factor VII were not significantly increased. The concentration of factor X fell but was still significantly increased by the third month of treatment.

Further evidence has come from Clinch and Tindall (*Brit. Med. J.*, i, 602; 1969) who have demonstrated that liver damage attributable to the pill is probably caused by the oestrogen component and not the progestogen. They gave large doses of either stilboestrol or megestrol acetate to puerperal women to suppress lactation and compared them with a group of breast feeding women. Although there were no alterations in conventional liver function tests, a modified bromsulphthalein test was abnormal in the women taking stilboestrol. Coagulation changes may be secondary results of liver damage, which again is caused by oestrogen but not progestogen.

Of more fundamental interest is the study by Jick *et al.* (*Lancet*, i, 539; 1969) which shows that the incidence of thromboembolic disease in women taking oral contraceptives varies with the ABO blood group. There were significant increases in the ratios of A/O and A+B+AB/O for women using oral contraceptives in the United Kingdom, Sweden and the United States and pregnant and puerperal women in Sweden. Differences in the ratio which are probably significant were also found in pregnant and puerperal women and medical patients of both sexes in the United States. The estimate is that a woman with blood group A is twice as likely as a woman with blood group O to have a thromboembolic incident when she is pregnant, and three times as likely to have one if she takes oral contraceptives.

Blood coagulation is a complicated subject which is still incompletely understood. The association with blood groups may even suggest that different oral contraceptives may need to be suited to a woman's genetic makeup. The evidence so far is that the synthetic oestrogens are responsible for most of the harmful side-effects, and the new low-dose progestogen pills are probably safer for all women.

CANCER

Genetics and Cancer

from a Correspondent

THE Twenty-third Annual Symposium on Fundamental Cancer Research was held at Houston, Texas, on March 5–7 under the title Genetic Concepts and Neoplasia.

Robert W. Miller (Bethesda) summarized studies of the relationship between neoplasia and various other disorders, giving special attention to inherited diseases. Fanconi's anaemia and Bloom's syndrome are examples where simple recessive inheritance gives rise to chromosomal instability. Among other problems, such patients face a high risk of malignancy, which includes leukaemia but not lymphomas. Robert A. Good (Minneapolis) reviewed the immunological deficiency states and argued that immunological deficiency is an important element in the development of neoplasia. Both Good and Philip J. Fialkow (Seattle) pointed out the increased risk of malignancy resulting from immunosuppressive therapy. Kurt Hirschhorn (New York) expanded on the high risk of cancer associated with certain genotypes with reference to his studies of SV40 transformation of cultured human fibroblasts. There seems to be differential susceptibility to transformation by treatment with chemical carcinogens as well as by viruses. It has been suggested that chromosome instability associated with certain genotypes and with certain chemical treatments may result through the intermediate action of lysosomal instability. Maimon M. Cohen (Buffalo) described studies which indicate that lysosomal stabilizers do not protect lymphocytes