properties and experience with the estrogen alone or the progestin alone cannot be equated to the combined medication. The best model for the biological effects of the pill is still pregnancy. Again in your reference books, you will see that many physicians and scientists rightly object to an oversimplistic comparison of the pill's effect to the pregnant state, however, there are still useful analogies to be made with respect to the metabolic alterations and health risks involved. It is just as wrong to say we cannot compare them as it is to say the comparison is complete. Just about all of the side effects and metabolic alterations produced by the pill were first observed years ago as complications of pregnancy, including thromboembolism, blood clotting disorders, hypertension, liver disorders, alterations in fat and carbohydrate metabolism, pigmentation, hair loss, and post-pregnancy infertility, just to name a few problems shared by pregnant women and pill-takers. I am not trying to equate the two conditions, but the similarities are striking.

Mr. GORDON. Dr. Ryan, may I interrupt you?

Dr. RYAN. Yes.

Mr. GORDON. Do you know any studies to show what the lowest effective amount of estrogen would be?

Dr. RYAN. For what purpose?

Mr. GORDON. For oral contraception?

Dr. RYAN. There have been some studies conducted to test——

Mr. GORDON. Who is the sponsor?

Dr. RYAN. There have been studies to test the minimal dose of mestranol, which will inhibit gonadotropic release. These have not been the characteristic dose response curves that people would like to see. The reason that the higher estrogen has been used is that they can with more certainty prevent the release of the gonadtrophin with the higher dose—0.02 mg., for instance, of mestranol will not consistently stop gonadotropic release, where as 0.05 in many cases does, and 0.08 certainly does.

Mr. GORDON. We have 0.05-mg. pills, do we not?

Dr. RYAN. In a combination pill.

Mr. GORDON. You have considered it effective?

Dr. RYAN. Yes.

Mr. GORDON. We also have higher numbers, too, don't we?

Dr. RYAN. Yes.

Mr. GORDON. If we have 0.05 in the market and it is effective, why do we need the higher dose, the higher amounts?

Dr. RYAN. This becomes, again, very complicated. There are two problems. One is the effectiveness and the other is the ease and control in breakthrough bleeding and other of the less serious side effects, what you might call nuisance side effects in the management of the woman's cycle. It has been that kind of balance that the pharmaceutical industry has become involved in this trying to come out with a pill that is acceptable to woman, which will provide her with the most natural artificial cycle and still prevent pregnancy.

The other relates to the red tape, the problems they have in trying to go through the red tape in getting a pill on the market. They did facilitate the medication with the new doses on the market much faster than would ordinarily be the case.