

itself. *At the present time we cannot state with any certainty the degree of risk or absence of risk associated with each measurable change.* It is some comfort, for example, to note that the changes in the blood clotting mechanism which occur normally *during pregnancy* are *not* associated with an increased tendency toward thrombosis or pulmonary embolism. On the other hand, we cannot simply ignore the existence of the many hormone-induced changes: they must be studied in depth and their contribution to any risks of pill usage must be assessed, and then balanced against the benefits of the Pill. In Appendix 1, I have tabulated a number of significant statements regarding indeterminacy or absence of risks as given by the experts included in the Salhanick book on "Metabolic Effects". Hopefully, they will help to improve the perspective on these questions.

Quite obviously, it is a big disadvantage of the Pill to have such widespread effects. An ideal contraceptive ought to have a single, highly selective action at some critical point in the reproductive process, and no other effects anywhere else in the body. All scientists recognize this point, and much work is being done to develop new classes of contraceptive agents which are more selective in their site of action.

Question 2. Do we know that there is an increased risk of cancer from taking the Pill?

Answer: We do not. In fact, the whole question of hormones as a causative of human cancer is highly controversial at present.

Interest in the relationship of hormones to cancer dates back at least 35 years, to experiments performed by a Frenchman on some highly inbred strains of *male* mice given huge doses of estrogen (female hormone) for long periods of time. Since then, all sorts of tumors have been produced in about 5 species of laboratory animals by hormone treatments. However, it is highly questionable whether these experiments have any relationship to cancer in humans. Usually, special strains of animals must be used for these studies, because some strains are totally resistant to developing tumors from hormone treatment. Relatively huge doses of these hormones are given to the animals for very long periods of time; such drug exposure bears no relationship to anything humans might experience.

At a recent scientific meeting, Dr. Gerald Mueller, Professor of Oncology (Cancer) at the University of Wisconsin, and one of the world's outstanding authorities on the relation of estrogens to cancer, said the following about the tumor experiments in animals: "Most of the tumors that have arisen (in animals) under these circumstances are dependent on the (administered) hormones to start with, and as soon as you take away the hormonal support, the tumors essentially evaporate from the scene. It is only after a long, progressive pushing of these tumors that some of them change to become hormonally independent. *The data really argue for the fact that estrogens of their own accord are not primary carcinogens* * * * To produce tumors in experimental animals, you usually end up using fantastic levels (of hormones). I think the gross dosage used for experimental tumor production is completely different from what's used in contraceptive control." Nevertheless, there are scientists like Dr. Roy Hertz, whose almost ritual expressions of alarm have changed little over the past 20 years in spite of accumulating evidence to the contrary. He talks about the various species of animals that can get experimental tumors, but he does not mention some, like the guinea pig, that are totally resistant. He does not mention that the tumors nearly always disappear when the hormone is withdrawn. He never mentions the experiments of Nobel-Prize-winning Dr. Charles Huggins, who showed that chemically-induced breast tumors in mice can actually be *suppressed or prevented* by injection of the supposedly dangerous female hormones. He never emphasizes the fact that no experiment to date has been able to produce a hormone-induced cancer in monkeys, the species most closely related to man.

An argument has been made of the fact that it takes a long time for cancers to develop, and we cannot therefore say anything about the dangers of tumor production by the Pill at this time. It is estimated that this time-lag is of the order of ten years, although this is not much more than an educated guess. It is true that the Pill has only been used about 13 years, and that really large numbers of women did not start to use it until about 5-6 years ago. However, estrogens have been around for thirty-five years, and have been taken for the treatment of menopause and other disorders by millions of women. We should therefore expect to see by now some evidence of the harmful effect of these hormones.