

## HISTORICAL NOTE

Cornell University Medical College, Department of Obstetrics and  
Gynecology. Study of Diagnostic Uses of the Vaginal Smear.

Comments by Dr. Heffron.

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These comments are added here for the sake of the record. When this program began, Dr. Papanicolaou had for years been studying the content, type, and morphology of cells found in smears taken from the vaginas of rats, mice, and guinea-pigs, and had determined that rhythmical changes occur in these cells in response to hormonal influences in the bodies of these animals at various periods of the sex cycle. He had also made vaginal smears from women and shown somewhat similar responses at various phases of the menstrual cycle and had found characteristic changes in the vaginal smears during pregnancy and menopause. During this work it was also found that suggestive changes occurred in smears that seemed to be associated with pathological conditions of the genital tract, such as cancer of the cervix and the body of the uterus, and in hypotrophic keratosis and hyperplasia of the endometrium. In other cases, smears showed characteristic changes due to vaginal infection by various kinds of organisms.

In the main, the emphasis had been on attempting to establish characteristic cellular variations associated with normal physiological processes, but as time went on, increasing evidence suggested that the vaginal smear might be a very simple and highly useful procedure for investigating pathological conditions of the genital tract as well. At the time that the first grant for this work was made in December 1940, much animal work had been done but only about 1500 vaginal smears from women had been examined. The possible use of this procedure for studying physiological changes related to the sexual cycle and infections was mentioned in the first Board report, as was its possible use for detecting cancer of the genital tract. So few cases of cancer had been studied, however, that the workers involved in this program rather tended to minimize the possible usefulness of this procedure for diagnosing uterine cancer. After the study got under way, however, and smears were regularly obtained from



the New York Hospital Out-Patient Clinic and the Women's Hospital, as well as from a few other sources, it was soon found that the vaginal smear did indeed seem to be amazingly successful in detecting the presence of cervical or uterine cancer and within six months after beginning this study, almost all the work was concentrated on this phase of the program. Very soon thereafter it was decided to publish a monograph on the use of the vaginal smear for detecting cervical and uterine cancer, which was to include color plates. The material for this was rapidly gathered and prepared, and in 1943 this monograph was published. Prior to that time there had been a few journal articles dealing with this problem and Dr. Papanicolaou had demonstrated the technique at a few medical meetings and word rapidly got around that this was a highly useful new procedure that could often detect the presence of cervical or uterine cancer before the patient showed any symptoms whatsoever. Hence, the method appeared to be valuable for early diagnosis. Later publications also resulted from this work.

On the basis of the first two years of study, <sup>when between 8000 and 9000 more smears had been studied</sup> it was determined that cancer of the cervix or uterus could be detected in between 88 and 98% of the instances by vaginal smear. There was no other method available that yielded such a high degree of success with such a minimum of difficulty in time, expense, or inconvenience to the patient.

At the time of the first grant, applications were not made to any other foundation or source of research funds except the Fund to support the work. Later on, however, as the study expanded and progressed quite well, an effort was made to obtain some funds from the American Cancer Society to support a part of the program, but the American Cancer Society said that they were not interested. This was perhaps due in part to the fact that that society in those years was a rather shaky organization and not really very effectively operated. I am not sure who Dr. Papanicolaou dealt with there at that time but, in any case, the Fund continued to support his work and in the course of the next few years the studies of the vaginal smear and then of the endometrial smear were extended and the procedures began to be widely used both in hospital clinics and in public health clinics, as well, for screening purposes. In addition, comparable procedures were applied to the study of cells



obtained from peritoneal fluids, bronchial aspirations, gastric aspirations, intestinal contents, joint fluids, spinal fluids, etc. Here again it was found that it is frequently possible to determine the presence of cancer of various organs from cells found in such materials. Therefore, the value of the method was markedly increased and extended and it is now widely used for diagnostic purposes in practically all civilized parts of the world. Dr. Papanicolaou has received almost endless honors and prizes of various kinds from medical and public health groups in many parts of the world. He has, in fact, been nominated for a Nobel Prize by Cornell. This was done some ten years ago.

In recent years the American Cancer Society has become extremely enthusiastic about these various procedures and has strongly backed Papanicolaou and has provided him actually with more money each year than he could spend on his research, and he has returned sizable sums to this organization annually for the past ten years or so. They have in addition provided a part of his salary in recent years, and Mrs. Lasker of the Lasker Foundation has given him a pension for life, I believe at the level of \$10,000 a year, and at the moment I think the Cancer Society matches this sum. In recent years also, the publicity put out by the American Cancer Society would make it sound as if they had backed this work since its very inception and had financed all the research that went into these discoveries. This is clearly not the case, as our records demonstrate. During the past year or two I know that Dr. Joseph Hinsey, who is the Director of the New York Hospital-Cornell Medical Center, and who was Professor of Anatomy at the time this work began, has protested to the American Cancer Society for some of their publicity in supporting Papanicolaou's work, in which the implication has been that all of these discoveries stem from research supported by that organization. Dr. Hinsey was head of the department in which Dr. Papanicolaou has been working for many years.

While the vaginal smear continues to have usefulness for purposes other than simply diagnosing cancer, its value in the cancer field has far outweighed its significance along other lines. Dr. Papanicolaou is slated to leave Cornell this fall to head up a new Institute of Cytology located in Miami, Florida, which,



I understand, is to be named for him. As I understand it, this is an independent institute not closely affiliated with any medical school. The plans/<sup>I saw</sup>for this building called for a three or four story structure and basement, about 60x100 feet, with many separate research laboratories as well as some clinic space and a library and conference room. Part of the support of this institution comes from donations from local groups in the Miami area, plus grants from other organizations.

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