discussion invariably reveals that most medical schools either deliberately or through negligence allow prospective medical students to see all of the confidential information accumulated about them. This occurs during the interview procedure.

Most commonly, the student is given his confidential file to carry into the interview. He has many opportunities to browse through its contents during the day as he passes from one interviewer to the next; few students resist the temptation to look in their file. Those that do resist often hear the interviewer comment upon the letters, read sections aloud, or the student himself is allowed to see the letters.

It should be unnecessary for me to point out the problems that are created by this sloppy procedure, not to mention the questionable ethics involved. A faculty member writing a less-than-glowing letter is himself subject to student criticism. More important, medical schools depend upon honest, candid evaluations. A faculty member is much less likely to write such an open appraisal of the student if he knows that the information will not be kept confidential. Thus, the letters are less meaningful in sorting out applicants. There are, of course, some people who argue that all letters should be available to the student. Whatever the merits of this argument may be, it is clear that the medical schools should either tidy up their security or make a general announcement that all letters of recommendation are open to student perusal.

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## Cancer Detection

To those of us who examine specimens submitted to a cytology laboratory for the diagnosis of cancer, it is always a bit startling and discouraging when it is brought home to us anew that apparently there are still many who believe that the Papanicolaou method of detecting cancer is limited to neoplasms of the uterus.

This was again made evident in a paragraph of Thomas H. Maugh's report "Fetal antigens: A biochemical assay for cancer?" (Research News, 12 Apr., p. 147). He briefly discusses the ineffectiveness to date of most attempts to diagnose cancer sufficiently early to effect cures, and then states: "The principal exception to this rule is the Papanicolaou stain (Pap smear), in which cells sloughed from the lining of the uterus are examined for abnormalities indicative of cancer. . . . But the Pap smear represents a unique case in which the sloughed off cells are readily accessible, *and it is unlikely that comparable cytologic assays will be developed for cancers of other internal organs* [italics added]."

For years it has been routine in many laboratories of diagnostic cytology to examine appropriate specimens for the detection of cancers of the nasopharynx, trachea, bronchus, lungs, stomach, esophagus, colon, urinary bladder, ureter, renal pelvis, renal parenchyma, prostate, breast, and central nervous system. Papanicolaou (*1*), himself, extended the application of the cytologic diagnosis of cancer to include the above-mentioned cancers. In the Papanicolaou Cytology Laboratory of the New York Hospital–Cornell Medical Center, for instance, a total of 37,437 specimens were examined during the year ending 30 June 1973. Most of these (26,572) were from the female genital tract, but the remaining 10,865 specimens were from nongynecological areas.

This diversity of specimens is not by any means peculiar to this laboratory. Most cytology laboratories receive a similar assortment for evaluation. Pathologists are expected to be trained in the interpretation of cytologic material, and the more than 100 approved schools of cytotechnology in this country (which train technologists to perform the preliminary microscopic examinations) must of necessity instruct their students in both the gynecological and nongynecological aspects of cytologic diagnosis.

It is unfortunate that the term "Pap test" has become, by virtue of common usage, synonymous with the cytologic detection of cancer of the uterine cervix alone. The term should properly include the cytologic detection of many other cancers of the body, both of males and females. Another example of incorrect terminology is the reference to the Pap stain as the equivalent of the Pap smear or test. The stain is actually a modified hematoxylin and eosin stain, utilizing several counterstains, which was developed by Papanicolaou over many years of exhaustive trials of different combinations and which is still used in many, if not most, diagnostic cytology laboratories. By no means is it a specific stain for malignant cells, but rather it is a very effective means of accentuating the morphologic details of cellular nuclei which are so important in this technique of diagnosis.

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### References

1. G. N. Papanicolaou, *Atlas of Exfoliative Cytology* (Harvard Univ. Press, Cambridge, Mass., 1954).

Certainly no one will dispute with Maugh that the most critical deficiency of modern cancer therapy is the lack of a means of detecting the onset of malignant neoplasias. Determinations of increased or decreased enzyme levels in the blood are merely indirect biopsies of already well-established primary or metastatic tumors. Use of $\alpha$-fetoprotein for a serologic test is not only theoretically incorrect, it has proved worthless as a reliable and simple means of detection of cancer in our experience as well as in that of the Mayo Clinic group and others. The question can be raised of whether a successful chemical or serologic test for early cancer diagnoses will result as a by-product of cancer research per se, as for example the $\alpha$-fetoprotein test, or from a concerted effort to pinpoint some elusive, unique property of neoplasia or a pathophysiologic state that appears with the onset of cancer. It is now almost 20 years since the 1945–1955 period of intensive search for a biochemical and serologic "screening test" for cancer by investigators with imagination and courage to attempt it. It appears that Jesse Greenstein's laconic comment that "Cancer tests can be the graveyard for many a reputation" may have kept competent investigators from this area of inquiry. However, in view of the enormous technological and biochemical information that has been acquired in the years since 1955, this moribund state of affairs should not be allowed to continue as a glaring deficiency in the overall Conquest of Cancer Program.

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