

Until recently, however, machines capable of handling simultaneously more than four of the major determinations were not available. Prior to the development of such instruments Dr. Thiers and his associates assembled their own "10 channel" device from available separate components. Essentially, it is a battery of autoanalyzers set up to work together. Forty test tubes containing blood samples and standards are placed in a rack, and the blood, fed out through fine plastic tubing, is forced by a series of pumps through a dialyzer, through appropriate reagents, and depending upon the determination, through the flame photometer, fluorometer, or one of seven colorimeters. Results are recorded on charts by five twin-pen recorders. At present the machine can analyze 40 samples an hour. Experiments are underway to increase the number to 60 per hour.

During the year in which the machine was being developed, it was tested for accuracy and precision. The device was used to do determinations on the blood of all patients who entered the hospital during a period of about ten weeks—with the permission of their physicians—and the results of these tests were compared with results from blood chemistry tests specifically ordered by the patients' physicians.

Of each 1,000 patients who entered the hospital, Dr. Thiers said, specific tests were ordered by physicians on 470 of them and abnormalities were found in 150. The automated instrument also detected the abnormalities in the same 150 patients, but in addition, abnormalities were discovered in 210 other patients and reported to their doctors.

Physicians requested a total of 2,900 tests on 1,000 patients—an average of 2.9 per patient—and a total of 321 abnormal blood chemistry levels were found in 150 patients. The automated instrument turned out 11,000 tests on 1,000 patients and discovered the 321 abnormalities found by the routine tests plus another 365 abnormalities on different blood chemistry determinations.

Dr. Thiers said that a similar study

Public Relations Office Established

In November of 1963, Duke University Medical Center established an Office of Public Relations.

The first position in this office was filled by Miss Virginia Swain, who joined the Medical Center staff as a Public Relations Assistant.



MISS VIRGINIA SWAIN

was done with the machine at a large hospital in a nearby community and discrepancies of even greater magnitude were noted. Three times as many patients with chemical abnormalities were uncovered by the automated analyzer as were revealed by standard laboratory procedures.

Abnormalities detected by the automated tests were sent to the physicians of all patients. Doctors at Duke indicated that 53 per cent of the unsuspected results turned up by automation were significant to the care of their patients and five per cent were not significant. There was no comment on 42 per cent of the results. As Dr. Thiers notes, "Doctors, like most other people, are allergic to paper work."

On the basis of this study, Dr. Thiers believes that the automation technique can "dramatically" cut the time and expense involved in the diagnosis of many patients and may lead to the discovery of many con-

ditions in their early stages before clear-cut symptoms occur. A whole battery of tests can now be made available to patients at a significantly lower cost and little inconvenience. The sensitivity of individual chemical tests will be increased through the improved accuracy made possible by multiple testing with automation. More information about chemical variations in normal people will be provided. A further benefit will be the release of highly qualified laboratory technologists—who are in short supply—to perform supervisory rather than manual tasks.

Dr. Thiers goes on to say, "Multi-channel automation is more than just a revolution in laboratory techniques. Ultimately, I believe this approach, by providing far more complete information to the physician when he first examines the patient, will alter traditional methods of diagnosis."

Miss Swain's duties, although varied, are for the most part in the field of Medical Center publications. For the past year, most of her time has been spent working with revision of existing Medical Center publications (and other printed matter) and the creation of new publications. A "job description" of her position, based on the activities of this past year, would include:

- serving as a "liaison" between the Medical Center and the printer
- helping with preparations for visiting tour groups
- answering requests for general information about Duke Medical Center
- working with various promotional activities for Health Careers for North Carolina.

The present Office of Public Relations is located in room 323 Baker House; extension 4148.

Miss Swain received her A.B. degree in English from the University of North Carolina at Chapel Hill in January, 1963. Before joining the Medical Center staff, she was employed as Assistant to the Woman's Editor of the *Raleigh Times*.