

Mentors and Students Seeking Knowledge

“Research...a magic word”

A subtle revolution began on the campus of Emmanuel Missionary College around 1950. It was an academic revolution. Harder to track than the building boom that was captured in dramatic pictures. Not as easily quantified as the climbing enrollment numbers. It even started before the life-changing announcement of October 1958: “EMC—NEW UNIVERSITY SITE.”¹

Administrators liked to boast about the revolution nonetheless. President F. O. Rittenhouse included it in his report to the Andrews University Constituency Meeting of 1963. Among capital investment numbers, enrollment statistics, and student labor figures, he also reported these facts:²

Teachers with doctorates

1953	14
1958	26
1963	41

Rittenhouse probably found that, in a quick statistical summary, it was the only way he could sum up the academic change infiltrating the campus. For the numbers did not nearly describe the transformation of EMC’s academic atmosphere. New faculty with advanced degrees, both masters and doctorates, were bringing to campus new ways of approaching the academic endeavor. Stimulated by their own recent graduate programs at institutions across the United States and the world, they carried with them a probing curiosity, thirst for more knowledge, a new respect for the mentor/student relationship—for what teachers and students investigating together could discover.

Dr. Rittenhouse addressed the issue further in his remarks to the constituents of 1963, alerting his audience to the new realities of higher education:

Research is indeed a magic word in higher education today....

Today no institution of higher learning can be said to be abreast of the current scene without doing at least some research. ...Research is stimulating to teachers and

students alike.... Thus we face the dilemma of either proceeding judiciously with research or falling hopelessly behind. It is my view that we should not shrink from this type of activity.... (154)

In fact, President Rittenhouse and his faculty had already “proceeded” with research. And they had already recruited and energized a new generation of researchers—their students. You might say it began with a basal metabolism machine and a freezer.

Alice and the Nutrernauts

Alice Garrett Marsh knew, even before she moved back to Emmanuel Missionary College in 1950 with her biology professor husband, Dr. Frank Lewis Marsh, and her two children, Kendall and Sylvia, that she wanted to pursue research in her field of nutrition. In her graduate work at the University of Nebraska she had studied under Ruth Leverton, a pioneer woman in nutrition and biochemistry.³ Before she left Lincoln, as part of her hiring agreement, Marsh asked that the EMC Home Economics Department purchase two

items: a machine to measure basal energy metabolism and a freezer for preserving samples and foods in her scientific studies.

When the Marsh family arrived on campus in Berrien Springs, Alice discovered to her surprise that the freezer she had requested was already full. Beatrice Holquist, long-time EMC home economics teacher who was delighted with the new appliance, had done what every good homemaker should do: filled it full of the summer bounties of rural Michigan!⁴ It was a defining moment in the revolution.

Alice Marsh made known her new ideas in research not long into her tenure at EMC. By March of 1952, she was already studying protein intake and low hemoglobin during the first-ever EMC blood drive.⁵ Who was assisting her with the research? Students. Graduate assistant Claudia Eyre—planning and executing the study—and undergraduates Janeth Scanlon, Janice Ivey, Ramona Hale, and Carol Wolfe—doing the “calculations.”⁶

Probably the most memorable of Marsh’s many research projects, however, was “Operation Nutrernaut,” conducted



The first group of Nutrernauts, February 1963, seated left to right are—Lynda Summers, Maxine Berger, Ruth Ann Barron, Suzanne Carle, Sherry-Lee Olson, Janet Wonderly and Diane Robinson. Research staff members standing left to right are—Ramona McCoun (likely), Sharlene Nelson, Roger Greenley, Barbara Jemison and Alice Marsh.

with Dr. Dwain L. Ford, chair of the Chemistry Department and also a new force on campus for student research. Aglow with their new adventures in space, Americans of the early 1960s discovered a whole new set of words and metaphors for life on earth. The researchers of EMC were no different. When it came to referring to the subjects in their new study on the “metabolic response” of adolescent girls with a lacto-ovo-vegetarian diet, they chose the name “Nutrinauts”—a name, said Marsh, that was “timely and accepted and aided in giving the study a sense of importance.”⁷

The *Student Movement* happily picked up on the motif. As the paper announced the second and then the third group of explorers in the field of nutrition, it devised appropriate headlines: “AU Nutrinauts Begin Countdown to No Food—No Water Research” and “Nutrinauts ‘Blast-Off’ into Thirty-Day Obit.”⁸ Research had captured the campus imagination.

The project, conducted in three different phases in February 1963, October 1963, and January 1964, put a total of sixteen young women on a “rigorously controlled diet” for twenty-five days. The subjects’ bodily excretions as well as blood samples were chemically analyzed for substances such as “nitrogen, calcium, phosphorus, magnesium, iron, and a number of blood constituents.”⁹

The young women who participated in the study as the Nutrinauts were all between the ages of seventeen years, one month and eighteen years, eight months.¹⁰ During the experiment they lived together in the new and modern home economics apartment on the third floor of the Life Sciences building (later Marsh Hall). Not only could the researchers monitor their subjects there twenty-four hours a day, they could also make their lives as pleasant as possible in spite of their strict dietary regime.

Sharon Ulloth Ekkens, a junior home economics major, volunteered to be a Nutrinaut in the fall of 1963. She had the interesting perspective, as a nutrition

student, of being a subject in the research as well as working on the analysis of data for the following group of women. Marsh praised the Nutrinauts, “They are a self-disciplined, cooperative, happy group of girls who are scientifically minded.”¹¹

Sharon and her three colleagues, the second group in the study, received a gift to begin their stint—a special bracelet that read “No Food—No Water” to remind them that they could not eat anything not served to them by the research team or drink anything but the prescribed distilled water.¹² “We had to carry around water bottles and drink only the distilled water so that no extra minerals would come in the drinking water,” Sharon remembers. “That was a nuisance and difficult to remember. I think we all forgot once and drank out of the water fountain and then felt guilty.”¹³

Ekkens felt that the constant vigilance was even harder than twenty-five days of eating the food carefully meted out to the Nutrinauts by weight. The researchers tried valiantly to make the menus as varied and pleasant as possible, but the food had to be plain. Marsh’s scientific report on the project gives a sample menu for one day:

Breakfast

Canned applesauce
Choice of: Farina, Rice Krispies, Cheerios

Lunch

Rice or spaghetti
Tomato puree
Lettuce
Pears in juice

Dinner

Potato
Green beans
Celery (“fresh inner white stalks”)
Peaches in juice¹⁴

Sharon Ulloth Ekkens says, “I remember that the meals were very colorless and the portions were small. If we had lettuce for a salad it was always the lightest colored leaves. That was so they could gauge as accurately as possible the amount of vitamins

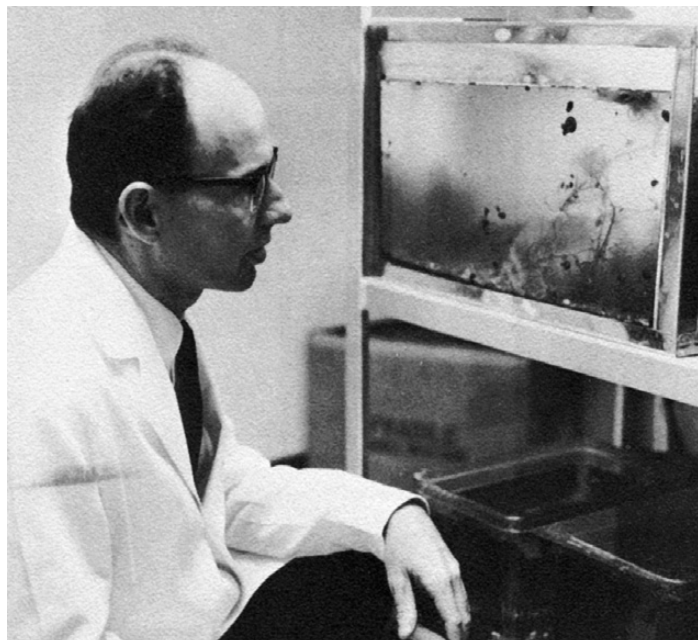


Top: The Nutrinauts made the front page of the *Student Movement*. Here Beverly Berger & Carola Blue (sitting) and Ingrid Schwantes & Sharon Ulloth (standing) receive their “No Food—No Water” bracelets from Dorothy Christensen, associate in research.

Bottom: Dwain Ford, chair of the chemistry department, co-chaired the Nutrinaut research project.



Above: The food preparation team fixes carefully weighed meals for the Nutrinauts.



Right: Ariel Roth, professor of biology, observes snails used in schistosomiasis studies.

and minerals we were getting in our food. We took a vitamin pill supplement of a known content.” At the end of a meal, Ekkens recalls, she never felt full. However, “I also felt the best that I had ever felt.”

The researchers had thought carefully about the Nutrinauts’ morale as well as their physical health during their enforced diet. Sylvia Marsh Fagal, then a junior dietetics major who followed in her mother’s footsteps, was a member of the “Nutrichiefs,” the team of faculty and student researchers who directed every phase of the study. She worked with her instructor in home economics, Sharlene Nelson Tessler, to brighten the lives of the subjects with appealing table arrangements, little surprises, and gifts.¹⁵ In a drawing to reward them at the end of each week, the Nutrinauts could choose from a selection of “treats” such as notebooks, special pencils, or small decorative figurines.¹⁶ Ekkens recalls, “Sometimes we would joke at mealtime about the foods we were missing, but they did special things for us . . . and the food was always served very attractively. At the end of the study we had a meal for which we could each choose a special food, and there was a great celebration.”

Perhaps the chief researcher bore much of the responsibility for the upbeat atmosphere that seemed to pervade the study.

Ekkens reminisces about Alice Marsh, “Mrs. Marsh was always fair, professional, cheerful, and exact. She explained well how to do something and was very enthusiastic.”

One of the things that impressed Ekkens about Marsh was her professionalism and the fact that she received grants for her research. Marsh and her cochair for the project, Dwain Ford, received two contracts from the United States Department of Agriculture for a total of \$36,000.¹⁷ Together they involved at least four of their colleagues¹⁸ and nineteen students in their research.

On the other side of the table, so to speak, from the Nutrinauts themselves worked many students such as Patricia Black, junior nutrition major, and G. William Mutch, junior chemistry major. Pat was a transfer student lured to Andrews University by Alice Marsh’s promise of a role in a research project, something that was almost unheard of for an undergraduate student at the time, according to Mutch.

Although most of the campus attention focused on the Nutrinauts themselves, months of preparation took place before they could even begin to eat. Pat recalls Saturday nights spent fixing and freezing Nutrinaut food such as the 100 pounds of uncolored, unflavored, and unsalted margarine Marsh had procured for the study.

Every portion had to be weighed with exact accuracy—“to the fourth decimal place”—because that was what Marsh, the rigorous researcher, demanded, “absolute perfection.” Once the diet began, Pat lived in the home economics apartment with the Nutrinauts as their student dean.¹⁹

Over in the chemistry building student assistant Bill Mutch presided over the analytical lab. Before the experiment even began, he and Pat Black put together the nutritional supplements that would be taken every day by the Nutrinauts.²⁰ Bill meticulously weighed the ingredients, putting them on glassine squares from which Pat painstakingly “packed” them into gelatin capsules. With the study underway, Pat carried the crucial biological samples from the apartment over to Bill every day: urine samples, fecal samples, and menstrual pads. Every night Bill returned the eagerly awaited creatinine results to Pat and the Nutrinauts.²¹ Then the two young scientists put their heads together to discuss the results.

By the end of data analysis, Bill had analyzed more than 20,000 samples over the course of three years, putting himself through most of his college career. He and Pat had also each found a life partner—one of Mrs. Marsh’s favorite results of the research project.

Marsh, Ford and Dorothy K. Christensen, chief research assistant, published in 1967 in the *Journal of the American Dietetic Association* the results of their study—the largest student/faculty collaborative research project to date at Andrews University.

“Snails Demand Air Conditioning”

Alice Marsh and Dwain Ford and their Nutrinaut team represented a whole cadre of faculty members ready to share the excitement of research with their students. The topic of faculty and student research became news in the pages of the Student Movement.

Dr. Donald D. Snyder, chair of the physics department, sponsored research on analog computers by Stanley Applegate and Keith Severer and on spectroscopy by Victor Haynes and Philip Steinweg.²² Dr. Asa Thoresen, chair of the biology department, initiated fieldwork—from hunting salamanders in Tennessee to collecting birds in Peru.²³ Engineering students Mauri Ahokas and George Gabel conducted research with “a model x-y recorder and time base.”²⁴

In 1961 Thoresen and Dr. Ariel A. Roth found themselves escorting thirty Puerto Rican snails from Chicago to the campus for a research project on schistosomiasis. Junior biology major James Roberts would be their research partner for the particular snails, who “demanded” that air conditioning be installed in the animal building behind the Life Sciences building.²⁵

Snails and spectroscopy. Nutrinauts and metabolism. The magic of research had come to EMC, riding the cusp of transformation as “the old College” became the new community of researchers and scholars now known as Andrews University.

Meredith Jones Gray is professor of English at Andrews University and is currently working on the second volume in the Andrews Heritage series. If you have any stories about student research at Andrews, she'd be delighted to receive them at focus@andrews.edu.

- ¹ *Student Movement*, 7 November 1958, 1.
- ² “Report of the President of Andrews University for the Quadrennial Period 1959-62,” *Lake Union Conference Minutes*, 1959-1962, 2 May 1963, 153.
- ³ Patricia Black Mutch, interview by author, 23 August 2007.
- ⁴ Sylvia Marsh Fagal, interview by author, 6 August 2007.
- ⁵ “E.M.C. Blood Bank to Open Sunday,” *SM*, 12 March 1952, 1.
- ⁶ “Students and Faculty Give Blood,” *SM*, 19 March 1952, 1.
- ⁷ Alice G. Marsh, Dwain L. Ford, and Dorothy K. Christensen, “Metabolic Response of Adolescent Girls to a Lacto-Ovo-Vegetarian Diet” *Journal of the American Dietetic Association*, 51 (November 1967): 443.
- ⁸ *SM*, 24 October 1963, 1, and 22 January 1964, 1.
- ⁹ *SM*, 24 October 1963, 1, and 27 February 1963, 1.
- ¹⁰ Marsh et al., *JADA*, 441.
- ¹¹ *SM*, 27 February 1963, 1.
- ¹² *SM*, 24 October 1963, 1.
- ¹³ Interview by author, 17 August 2007.
- ¹⁴ Marsh et al., *JADA*, 442.
- ¹⁵ Interview by author, 6 August 2007.
- ¹⁶ P. Mutch, interview by author, 23 August 2007.
- ¹⁷ *SM*, 22 January 1964, 1.
- ¹⁸ Dorothy K. Christensen (home economics), Ramona McCoun, Bruce Powers (chemistry), and Sharlene Nelson Tessler (home economics).
- ¹⁹ Interview by author, 23 August 2007.
- ²⁰ G. William Mutch, interview by author, 23 August 2007.
- ²¹ Creatinine results indicated whether the participants had given complete urine samples. Their goal was to have consistent results throughout the study.
- ²² Snyder, “Research Done by Four Physics Students,” *SM*, 2 May 1960, 2.
- ²³ *SM*, 20 December 1961, 4, and 18 December, 1963, 1.
- ²⁴ *SM*, 20 December 1964, 4.
- ²⁵ “Parasitic Snails Are EMC Guests,” *SM*, 15 March 1963, 3.

Nutrinauts

February 1963

Ruth Ann Barron
Maxine Berger
Janet Wonderly
Suzanne Carle
Diane Robinson
Lynda Summers
Sherry-Lee Olson

October 1963

Beverly Berger
Carola Blue
Ingrid Schwantes
Sharon Ulloth

January 1964

Dana Dick
Arna Dyresen

Jeanne Kurtz
Cyndie Rausch
Jeanne Rauch

Student Researchers and Assistants

Food Planning & Preparation & Non-Food Interests

Donna Ballard
Bill Mutch
Sharon Culpepper
Roger Greenley
Rose Greer
Claudette Harder
Barbara Jemison
Sylvia Marsh
Heather McReynolds
Ethel Roberts

Wilma Schmidt
Marrell Sundean
Dixie Torres
Sharon Ulloth
Shirley Wettstein

Chemistry

Peggy Kemmerer
Pat Black
Elaine Smith
Marilyn Wilkinson

These lists are compiled from the *Student Movements* of 27 Feb and 24 Oct, 1963, and 22 Jan, 1964. The names are recorded as originally reported.