

Muscular Activity Research To Help Amputees

by Larry Lamont

Since 1960 a research program has been in progress at UNB to help with the rehabilitation of the physically handicapped. In 1965 the Bio-engineering Institute was established to facilitate inter-disciplinary research in the use of myo-electric control systems for the operation of powered equipment. Specifically, this equipment is electrically controlled artificial limbs.

Primarily, this work involves research into a better understanding of muscle activity in physical conditioning. Remedial and therapeutic exercises are also carried out. The end result is the development of controls and practical designs for a system of operating an artificial arm or leg by the handicapped person.

The muscles of an amputated arm by themselves offer no useful work. But when they are contacted voluntarily, enough electrical activity is produced for measurement and use. By turning this activity on or off through contraction, the flow of electricity from a battery to the artificial arm or leg can be controlled for the handicapped. The patient is then able to make near hand-like movements simply by voluntary movements of muscles in the shoulder. However, not enough electricity is produced in the muscles to act as a battery itself.

The staff of the Bio-engineering Institute are not involved with the construction of the new limbs themselves. Through their research in controls, they make the limb assembly and fit it completed to the patient.

Electric hands are commercially available to the Institute.

Design and development of controls is still in the experimental stage, according to Professor R.N. Scott, the executive director. Also, because sizes and shapes of forearms are so different for the patients, often children, the controls must be individually fitted. Numerous power arms have been successfully fitted for patients from the Maritimes and from as far away as North Bay and Pennsylvania. "Some of the controls developed and designed here have been fitted at other centres in Toronto and Winnipeg."

For its myo-electric research program, studies must be made of the conductive qualities of the muscles, internally and externally through the skin. In the former, very fine wire electrodes are inserted to different muscle parts and

readings of electricity generated by the body are taken.

In the latter type of study, surface electrodes (disks of plastic and conducting gelatin) are placed on the student subject. Carefully controlled electricity is fed between disks and impedance readings are taken. This is to establish the best controls that can be made. "The order of magnitude of the electricity is smaller than anything that will do any harm."

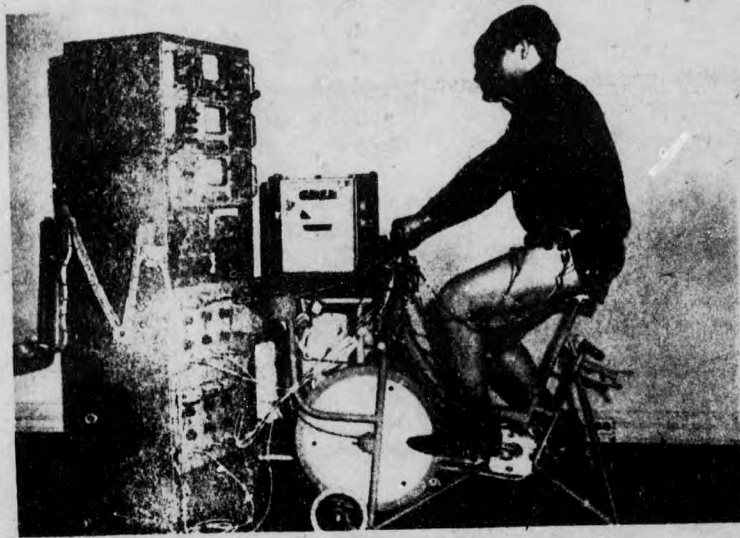
The Institute is absolutely dependent on volunteer student subjects for all the work that has been done. Mostly they have been phys. ed and nursing students.

Because UNB students are only here for two-thirds of the year, it is especially important that much of the work be done now. Although the Institute has never had to stop work because of subject shortages, the staff occasionally has had

to 'scramble' for more subjects. At the present time, the list of those available is not "quite as long as it could be." Human subjects are needed rather than animal subjects since human muscles are involved.

The fear of electrodes by some of the student body is mostly psychological. The majority of the tests this year involve only surface electrodes, which do not penetrate the skin. All tests are perfectly safe, conducted by trained specialists whom have also undergone the same tests at one time.

Four years ago the Institute received the "Annual Rehabilitation Award" from Reader's Digest at the recommendation of the Canadian Council for the Rehabilitation of the Disabled. Grants from the federal and provincial governments, research councils, and the UNB Alumni finance the projects. UNB provides the facilities.



Tony Montanaro Here Oct 1

Tony Montanaro, Mime, and Michael Henry, assisting artist, will appear in "A Mime's Eye View" at 8:15 p.m. on October 1 at The Playhouse. The performance presented by the UNB Creative Arts Committee.

Montanaro is a mime who serves the art with a great gift of talent and superb discipline. A piercing insight has led him to create mime sketches, studies and illusions of a broad range and mischievous commentary. His is a theatre of significance and mature statement — an impudent sharing of hilarity and sardonic observations of man and his involvements — in this theatre Michael Henry contributes a second dimension that serves to broaden its scope and deepens belief in the worlds of awareness revealed to the audience.

As a master of his art form Montanaro is a performing artist of high creativity drawing on his very extensive theatre

background of study in modern dance, classical drama, and with Louise Gifford at Columbia University then with Marcel Marceau and Etienne Decroux, in mime. Subsequently Montanaro conceived, created and performed twenty weeks of television commercials filmed in Italy for Colgate-Palmolive Company. Returning to the United States, Montanaro's one-man show of "A Mime's Eye View" performed at the Gramercy Art Theatre in New York City was acclaimed as a fascinating experience by reviewers and Montanaro as a theatre artist to watch.

Then came personal appearances on television, a series of his own designed for family audience, "Pretendo" seen on CBS affiliated television stations, and in recent seasons extensive college and university tours bring Montanaro to every region of the United States. As guest artist, Montanaro has performed on national convention programs of the American Educational Theatre Association, the National Catholic Theatre Conference, as well as the New England

Theatre Conference, and at The White House. In the spring semester of '69 Montanaro fulfilled a teaching and directing schedule as Artist in Residence on the campus of Towson State College near Baltimore that accommodated his performance engagements elsewhere.

For Montanaro the ongoing creative process of evolving new repertory and touring performances of a mint fresh presentation of "A Mime's Eye View" each season, along with television, film, teaching and lecture commitments, contribute to a fulfilling professional life. With his wife Pamela and their children, Montanaro lives in the woodlands near Woodstock, New York. He has built a spacious studio there and established his Mime Theatre School where in summer session he teaches theatre arts.

As a major American theatre artist Montanaro epitomizes a fully realized artistry in Mime that communicates easily to innocent and sophisticate for a highly enjoyable experience in theatre.

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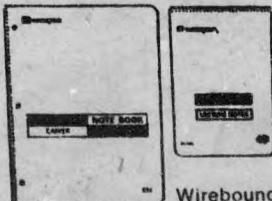


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