

By 1960, this technique had fallen into disrepute and was all but abandoned by plastic surgeons in North America. At this time, in Toronto, Dr. H. G. Thomson undertook research in an effort to refine the technique.

The initial work was conducted on pigs in order to develop some "philosophies of technique" that should be built into a machine. Simultaneously, clinical research was undertaken in co-operation with a medical artist to determine the best way to achieve color matching.

Five years ago, the first of 70 children was treated in a continuing research program at the Hospital for Sick Children in Toronto.

Research started with the original cable-driven Dermajector and then continued with a regular tattoo artist's machine.

It was established that small punctures rather than large ones permitted more pigment to be inserted with less associated burning, less dermis loss and less external loss of pigment. It was also found that the higher the frequency of injection, the greater was the amount of pigment inserted, giving the advantage of being able to inject a large amount of pigment prior to the start of profuse bleeding.

This finding led to adaption of a high speed air turbine motor to provide

the desired high frequency of puncture. Initial designs were plagued with troubles and, in 1967, the project was turned over to S. H. G. Connock, Head of the Instruments Section of NRC's Division of Mechanical Engineering.

Three prototype instruments were developed. The final one provides for combinations of 10, 20 and 26 needles held in "needle carriers". The operating frequency of the needles is about 20,000 to 22,000 cycles per minute.

The needles have an adjustable depth of penetration from zero to three millimetres. A "foot" on the instrument rests on the skin. It controls the depth of penetration and also positions the needle carrier correctly in relation to the skin surface.

Dr. Thomson has turned a duplicate instrument over to Dr. Robert Newton, also a plastic surgeon, who has treated a total of 13 adult patients at the Toronto General Hospital.

"We can now insert the pigment without difficulty," says Dr. Thomson. "And while the results of pigment insertion are excellent, that is not synonymous with clinical results being excellent. An evaluation panel has been invited to assess the results of our clinical work. This has been done to provide us with an impartial critical evaluation of the degree of patient improvement."



Use of new machine for treatment of the port wine birthmark is demonstrated with model.

Nouvel instrument pour le traitement des taches de vin.