

## down-to-earth skills mould sky-high ideas

### Honeywell's progressive teams of design engineers create advanced airborne systems for the AVRO ARROW

Mach 10...mach 15...mach 20...How long will it be before men project themselves across the sky at such colossal speeds? What problems will be involved...how will they be solved? These, and countless other questions are becoming nearer solution because of the work now being carried out by carefully chosen teams of men at Honeywell's Aeronautical Division, Toronto.

One of the many vital instruments developed in Canada by Honeywell for the Avro Arrow is the Mach Indicator. The first step in this task was the Human Engineering phase to assure optimum harmonization between the pilot and the instrument. Project leader Austin Hills broke the problem down into four logical stages...the drive system and the servo loop which combine to form the actuating system...the illumination system...and the encapsulation of the whole. Each separate problem was assigned to a section of the team with a series of rigid deadline dates.

After months of intensive effort, hundreds of accepted, proven ideas were tested in relation to specific problems,

along with many new ideas that were the result of numerous group discussions. Finally the pieces were put into place, and a linear motion indicator with three primary functions was created. First function...to show actual mach. Second...to show commanded mach—speed at which pilot should fly in order to reach a particular destination at a given time. Third...to display maximum safe mach depending upon flying conditions—altitude, outside temperature, etc. Another feature of the indicator is the wedge-lighting system which is designed to assure perfect visibility of indicator at night and at high altitudes during daytime.

The Mach Indicator for the Avro Arrow is a classic example of the ability of Honeywell's Canadian organization. But it is only the first step on an ambitious research, development, and production journey that will enable the Canadian aircraft industry to send men and weapons faster and higher to any part of our "overhead frontier" with pin-point accuracy and maximum safety. Honeywell's work toward these ends has already begun...

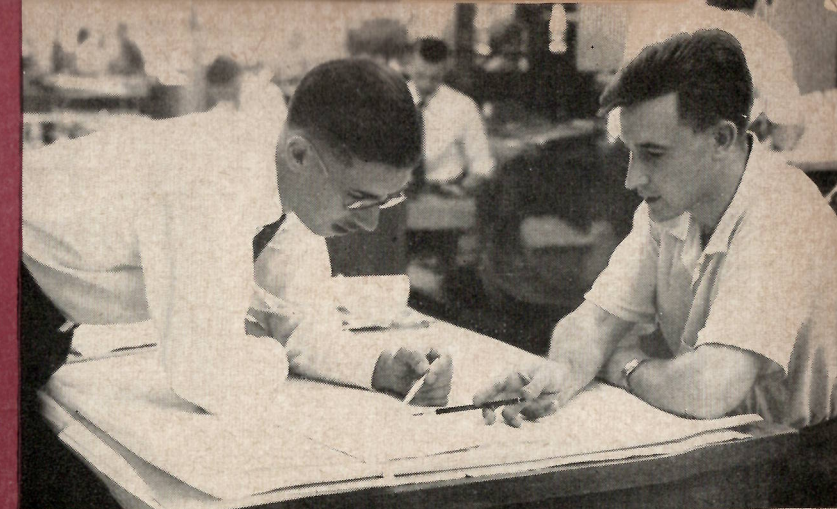
# Honeywell



Aeronautical Division



**MOCK-UP OF MACH INDICATOR** is shown here by Austin Hills, P. Eng. ...scale range is deliberately falsified. The Mach Indicator is only one of five devices developed for the Avro Arrow by the Canadian Aeronautical Division of Honeywell.



**SPACE AND WEIGHT SAVERS.** Alan Ranford, design engineer, discusses a special housing for the Mach Indicator with draughtsman, Bill Rattray. Because size and weight of housing is so important, Alan and Bill are prepared to devote extensive effort to eliminate a thousandth of an inch or a fraction of an ounce.



**NINE HEADS ARE BETTER THAN ONE.** When a problem threatened a deadline date it was found that time could be saved by assembling all members on the project team to tackle the problem together. Here, the Mach Indicator project leader seeks his group's solution to a heat dissipation problem.



**LIFE OR DEATH OF AN IDEA** is decided on the testing bench. Bob Johnstone, electrical technician, prepares a breadboard circuit to put a proposed servo system for the Mach Indicator through its paces ... many other tests are to follow.