

community facilities planning, will be offered 125 new fellowships. Of these, 100 are available for study in Canada and 25 for study outside the country. The amount of the awards will be \$3,000 for fellows working towards a master's degree and \$4,000 for those possessing an M.A. and seeking a doctorate. University tuition fees will be paid and a supplementary sum of \$500 will be available for each dependent child. Arrangements include the renewal of 75 current CMHC fellowships.

### LASER PROVIDES FAST ANSWERS

A new technique that uses a pulse of laser light to measure the thermal conductivity of materials — important information in the design of reactor-heat transport systems — has been developed at Whiteshell Nuclear Research Establishment.

The technique, using a 1,000-watt, one millisecond pulse from a ruby laser, is the first direct measurement of conductivity to use this principle, and is applicable at temperatures up to 1,600 degrees C. It produces readings in about two minutes, compared to other techniques, which could take as long as one day.

Developed by I.D. Peggs of the WNRE Materials Development Branch, the technique has been two years in changing from an idea, formulated during a conversation at a convention, into a working model.

Although not as accurate in some instances as conventional methods, the technique provides data

sufficiently accurate for studies at WNRE. Moreover, as additional refinements to the equipment and technique are made, accuracy which will at least equal other methods is anticipated.

In the past, thermal conductivity had been obtained by relating thermal diffusivity to density and specific heat as obtained from standard reference tables. Because irradiation changes both material density and specific heat, standard techniques could not be applied to the study of irradiated materials without extensive experimentation to relate these properties to the extent of irradiation.

In effect, the apparatus used at WNRE tries to record dispersion of the total laser heat output, thereby accurately determining the amount of heat passing through the sample under study. The specimen to be examined is mounted inside the tungsten heating elements of an evacuated furnace chamber. Temperatures to which materials would be exposed are duplicated by the heating element and then additional heat energy from the laser is pulsed into the specimen.

It is the transfer of this additional amount of heat energy through the specimen that provides the conductivity data sought. An infra-red photo-conductive cell at the rear of the specimen measures the rise in temperature; a dished mirror set at a known angle directs reflected heat from the specimen to a recording cell. Since the amount of reflected heat is recorded, and this, as a percentage of the total reflected heat, is known, the total absorbed by the specimen can be calculated.

### PERU PRAISES PILOTS

*In recognition of their services to Peru during the earthquake disaster last June, five Caribou pilots of 424 Squadron, Canadian Forces Base Trenton, Ontario, were decorated by Ambassador Cesar A. de la Fuente L., of Peru at a recent ceremony at the Peruvian Embassy in Ottawa.*

*Left to right: Lieutenant-Colonel W.I. Butchart, commanding officer of 424 Squadron, Major J.D. Donald, Captain J.J.B. Clermont, Captain Brian Cunniff and Captain J.R. Philip.*

