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THE ORENDA

Vol. 4, No. 22

November 28, 1958

Orenda engine achieves 1,000,000 flying hours

THE Orenda engine passed another milestone this week. It reached, and passed, the million-hour mark in total flying time since it first went into operational service early in 1953.

Thus another chapter was written in the story of Canada's aircraft industry. It brought a reminder that the Malton facilities Orenda has today did not even exist six years ago. That was one dramatic aspect of the event.

Personal Satisfaction

Another, and one in which all Orenda people must surely take pride, is the contribution each has made to the growth of this industry. Commenting on this, Earle K. Brownridge, Executive Vice-President and General Manager, said "In the same way, each has contributed to the strength of the western world's defence, to the expansion of Canada's economy and to the country's ability to do for herself things she never before was able to do. If we take a moment to think of these things, I am sure we all will find a sense of personal satisfaction in them."

"In this sense, we have been just as much pioneers as were those earlier pioneers who opened up the geographical boundaries of Canada," he added.

One reaction to the news was summed up by Ivor Roberts, now busy helping produce Iroquois blades. He compared the present task with the early stages of the Orenda program.

Shaped By Hand

"The (Orenda) blades were made from a solid block of metal at first and had to be shaped down to a mirror finish by hand," Ivor said. "At some stages, I thought the Orenda would never fly."

Alf Sherman of Sub-Assembly, who has been a part of the Malton aircraft industry for 19 years, recalled the contribution of ideas from the production floor and the teamwork and co-operation that was developed between the manufacturing and engineering organizations.

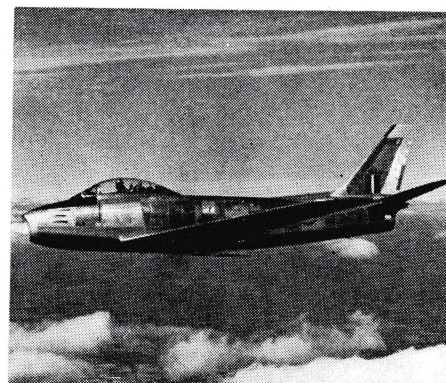
The Orenda, in six different models totalling 3,794 engines produced for

service, today is a first-line engine of five air forces on four continents.

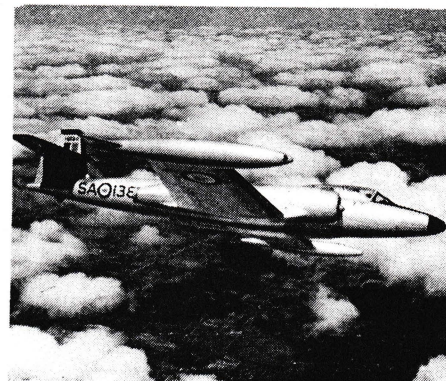
Of the 1,000,000 engine flying hours, approximately 60 percent has been done in the CF-100 interceptor, and the remaining 40 percent in the Sabre aircraft. The flying hours represent some 350,000,000 miles, or roughly 700 round trips to the moon.

The life—or time between major overhauls—was 50 hours initially, common to all new military engines with their introduction to service. Now this life is 400 hours.

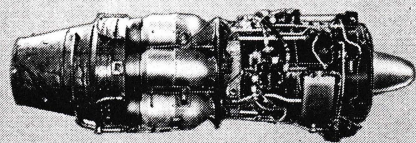
Six series of Orenda engines, the 2, 8, 9, 10, 11 and 14, have been manufactured as power plants for the Canadair-built Sabre and the Avro CF-100.



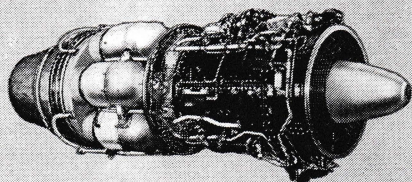
400,000 hours in Sabre



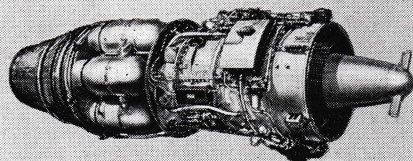
600,000 hours in CF-100



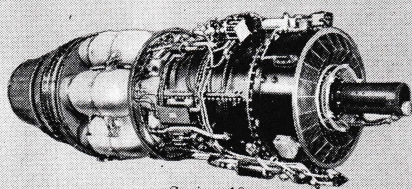
Series 2
Thrust 6,076 lbs. — Weight 2,685 lbs.



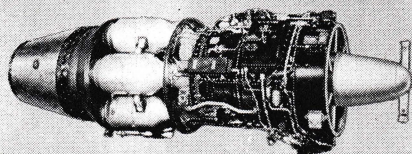
Series 8



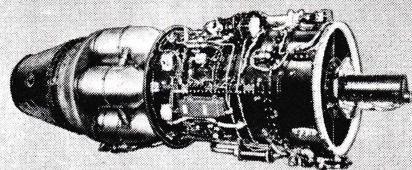
Series 9



Series 10



Series 11



Series 14
Thrust 7,275 lbs. — Weight 2,430 lbs.

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EDITORIAL

Years of experience

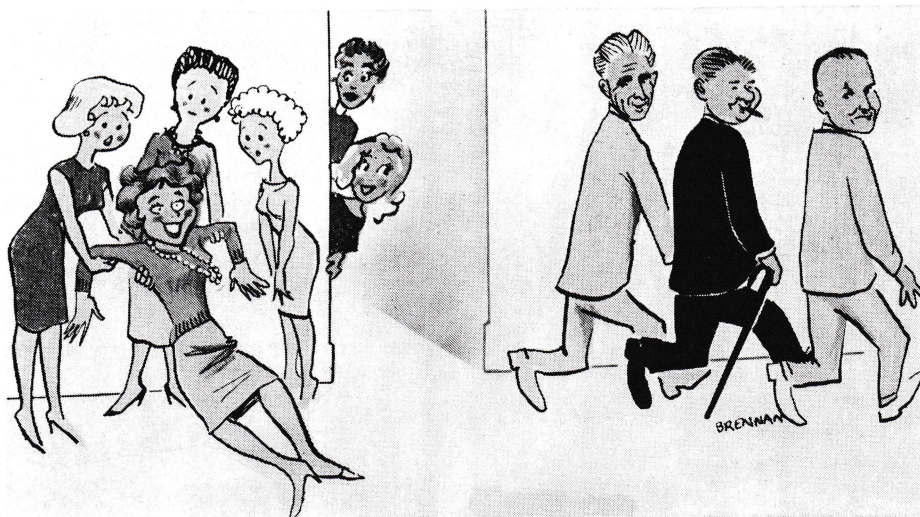
Our last editorial concluded with the thought that Orenda is, first, last, and always, a company of people. This edition, featuring photographs of the 190 new members of our 10-Year Club, drives the point home.

As of next Wednesday, December 3, there will be 558 men and women wearing their 10-year service pins. This group alone represents more than 6,000 years (60 centuries!) of engine-building experience right here at Malton.

Another impressive figure could be developed by adding up the years of experience in the jet engine industry which have been brought to Orenda in the brains and hands of many newcomers to Canada from the United Kingdom and elsewhere.

Although our company birth certificate is officially dated December 1, 1945, A. V. Roe Canada Limited and its two oldest offspring, Orenda and Avro, are by no means still wet behind the ears. Both Avro and Orenda have achievements to their credit which are the equal of any in the aviation world. These achievements are directly due to the creative thinking, the calculated risk-taking, and the conscientious application of Orenda people. The Orenda engine, and now the Iroquois, are not produced simply by investing millions of dollars in buildings and machines. They are produced by attracting brilliant minds and skillful hands and setting them at tasks which are full of challenge.

A machine can't feel the spur of challenge and respond, but a man can. And a group of men and women can feel immense pride in what they accomplish as a team. Out of such feelings grow the confidence and courage to move ahead and tackle ever more difficult engineering and manufacturing problems. It is this accumulated experience, knowledge and confidence—typified by the 10-Year Club member—that makes the future of Orenda so promising.



Arthur Godfrey tours Orenda

—by Brennan

Among Arrow-Iroquois boosters

Latest top-level support for the Arrow-Iroquois program came this week from Air Marshal C. Roy Slemon, deputy commander-in-chief of the North American Air Defense System, and from U. S. Air Force General Earle T. Partridge, NORAD commander-in-chief. It was reported by Robert Crichton of The Toronto Globe and Mail, writing from NORAD headquarters at Colorado Springs, November 24.

Air Marshal Slemon termed the CF-105 "the highest performance aircraft in the NORAD system until the advent of the F-108". (The F-108, he hoped, might be ready for service in five or six years. It is slated to supersede the F-106, soon to be used extensively by NORAD. General Partridge said the F-106 is as comparable to the F-108 as the CF-100 is to the Arrow.)

Both General Partridge and Air Marshal Slemon stressed that the need for a manned interceptor to combat possible attack by manned bombers and other methods of airborne attack, would continue for as far ahead as they could see. The air marshal said present NORAD requirements indicated the superiority of a two-seater interceptor, but the majority of F-106's to be produced will be single seaters. He indicated that in his opinion even those F-106's which will carry two occupants would be less pref-

erable than the Arrow.

He said the need for interceptors like the Arrow is greatest in the fringe areas of NORAD's coverage, and Canada is largely a fringe—particularly between the DEW Line and the Mid-Canada Line.

General Partridge agreed, and suggested that if Canada does not build the Arrow it should build another aircraft like it, or buy one from another nation.

He said that although he had not seen the Arrow perform, he has seen the aircraft and is favorably impressed with what he knows of its capabilities.

Air Marshal Slemon said that although it is difficult to compare different interceptors, as different ones are often rated at their peak performance in varying functions, he preferred an overall aircraft such as the Arrow to its closest rival, the F-106.

Canadian Aviation in its November editorial urged the Government of Canada to think again on the Arrow and the Bomarc . . . and made out a case with facts and figures to demonstrate "that the Bomarc is the more costly proposition, as must be obvious to anyone with a knowledge of aviation and missilery . . ."

Canadian Aircraft Industries has asked editorially: "Who says the interceptor is obsolete?" . . . and proceeds to make it clear that no such view has come from "military authority in a position to have intimate knowledge of the problems of modern air defense—of the lines along which an attack could be expected to develop having regard to the types of equipment possessed by a potential enemy—of the defensive capabilities of the modern interceptor and the ground-to-air guided missile . . ."

"If the issue were presented to the Canadian taxpayer fairly, squarely and accurately, instead of as it has been presented, we have no doubt about his

(Continued on page 10)



"All power is a trust . . . and we are accountable for its exercise."

Published semi-monthly by Orenda Engines Limited, Box 4015, Terminal A, Toronto, "The Orenda" is the newspaper of our Orenda community. Its job is to report news of interest to Orenda people—news about matters which concern us all.

All aspects of a mystery in Iroquois production

WHAT would you do when a component, measured as correct at a temperature of 73 degrees in the shop, expands rather than contracts in the 68-degree Standards room?

This was a problem that faced the Manufacturing Department in the new Iroquois production program. A problem that involved tolerances of 1/67th of an average hair width.

After grinding down the part, which in effect is an inner bearing surface and needs a very fine finish, it was found that the grinding coolant was leaving small scratches, or drag marks, on the surface. This was overcome by introduction of a special coolant and filtering system.

However, although meeting tolerances in the shop, the component which had used the new coolant—when checked in the 68-degree Standards room—was found to be oversize. This was unbelievable, according to shop people, as contraction usually occurs when a component is taken from the warmer (73 degree) shop to the cooler Standards room.

Ordinarily, a difference of five degrees in temperature won't make too much difference when working to average tolerances. However, tolerances for this component ranged from .0002 to .00004 and .00008. Tolerance of a crown was from .00004 maximum to zero minimum. Considering that the average hair width is 2.7/1000ths, these tolerances range from 1/4 of a hair to 1/67th of a hair.

Accordingly, an investigation as to why the component expanded rather than contracted was launched. Since standard measurement is at 68 degree temperature and the instruments in the Standards room are considered "true", the gauges

and measurements from the shop were at first suspect. But after checks had been made, it was found that these were all correct.

Further tests were made until it was discovered, by checking the surface temperature with a pyrometer, that immediately following grinding operations the component registered 62 degrees. Checking further, it was found the special coolant registered 60 degrees. Therefore, when taken into the 68-degree Standards room, the component would naturally expand with the additional six-degree heat.

The answer involved John Holden, Special Assignments-Master Mechanics. While he had stopped foreign material from entering the grinding lines by use of a filter, he had also developed a special coolant to prevent excessive heating during grinding operations. "It was a synthetic-type grinding compound that got results," he said.

Now that the mystery is solved, shop personnel, instead of working to top tolerances in anticipation of contraction in the 68-degree Standards room, work to .0002 below or at absolute minimum in anticipation of expansion.

Readings must be taken immediately following the grinding operation so that the component doesn't start to take on the 73 degree shop temperature and upset tolerances again. While it's a tricky operation, excellent results are now being obtained.

This is the age of defensive driving

(This is reproduced, in part, from a Sudbury Daily Star editorial).

It is futile to appeal to the witless. It is better to direct the attention of the careful drivers to the art of self-defence on the highways.

At 50 miles an hour look a mile ahead to see what is happening. The distance between two vehicles approaching at 50 miles an hour is measured in seconds. This is how you have to think in defensive driving. Your good driving and your good judgment is what will save lives.

"See how clever I am," says the death-dealing driver who barely manages to cut in front of you. He isn't clever, nor is he skillful in the handling of his vehicle. The tribute is the driver who slowed down to let him live, or the driver who saw him coming up behind in his rear view mirror and suspected some foolhardy action, and so prepared for it . . .

This is the age of defensive driving. Keep a sharp eye open for the driver who has not yet been banished from the highways because of his reckless, dangerous or drinking driving. . . .

We see where . . .

. . . Bill Vernon-Browne, Sheet Metal Progress Department, Plant 1, is a candidate for the 1959 Brampton Council. Bill qualified for the December 8 elections this week.

. . . Bill McCoy, Chief Liaison Engineer, was elected President of the Brampton Toastmaster Club. Jack Burgess, Chief Service Engineer, is the club's new treasurer.

. . . Doug Wilson, Photographic Department, says one isn't safe in one's own home. A reformatory escapee drove a stolen car into Doug's Acton home, smashing a \$2,000 hole in the basement.

Safety Officer asks for more passenger courtesy by drivers

Safety Engineer John Swanson states that the few drivers who drop their passengers off on the far side of the road opposite Plant 2, in addition to showing complete disregard for signs forbidding stopping, standing or parking, are forgetting the safety of their passengers.

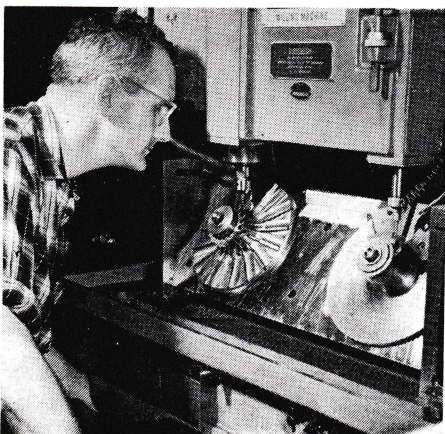
"They not only stand the risk of a ticket, but their passengers are exposed to the risk of walking across a busy highway," continued Mr. Swanson. "The more courteous drivers set down their passengers in the visitors parking lot outside Plant 2 and then re-enter Rexdale Blvd. from the road in front of Plant 2 lobby."

\$590,050 worth of bonds bought

Executive Vice-President and General Manager Earle K. Brownridge this week announced that \$590,050 worth of bonds were sold at Orenda, and added that this places great credit on the organizers of the campaign, led by Ed Marsden, with help from the Recreation Club, Lodge 717 and Lodge 1922.

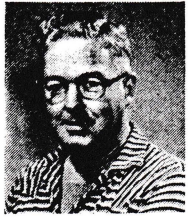
"I feel sure that the employees who are buying bonds as a result of the canvassers' efforts will be very pleased they have done so, particularly when next November rolls around and they are handed their bonds," he said.

Mr. Brownridge's statement that Orenda's participation has always been good on bond drives, and particularly during the past few years, was backed by Wilf Bickell at Midland Securities, who said "Orenda's contribution this year is more favorable than ever before in comparison with other large industries."



AN EXAMPLE of the fine work done at Orenda is the manufacture of this component. Precise to within a thousandth of an inch on this particular part, the milling is done electronically. The tracer (seen at the right) follows the pattern by electronic direction and thus directs the operation of the cutting tool. The operator is Al MacDonald, Tool Room. (Photo by Cliff Heckel).

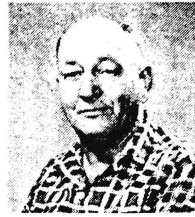
1958 Ten-Year Club Members



Carl Allen



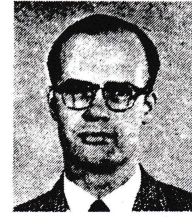
Don Anderson



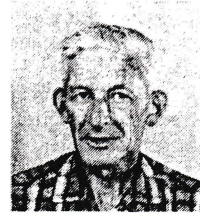
Floyd Archer



Bob Armour



John Armstrong



Phil Ayers



Al Bain



Harry Ballantyne



Roy Ballantyne



Jimmie Beedham



"Ben" Benbow



Gerry Benoy



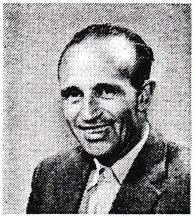
Charlie Birch



Jimmie Blair



Frank Blanchard



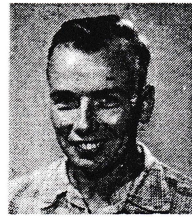
Al Bodiam



"Curly" Bolton



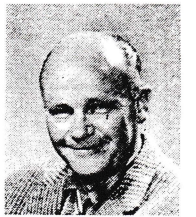
Albert Bown



Bob Boyd



Bill Boyd



Al Breadman



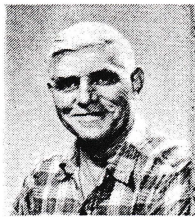
Herb Brook



"Brownie" Browne



Gene Bryans



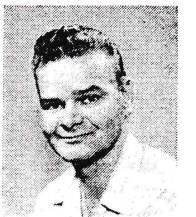
Bob Burrell



Stan Burrows



Ross Burton



Ralph Cameron



Jack Carroll



Art Chapman



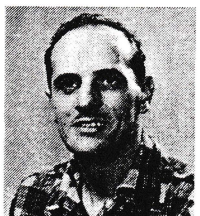
George Chettle



George Chippendale



Dave Chirnside



Jack Clarke



Ron Clarke



Ken Colby



Peter Comery



Charlie Cooper



"Jimmy" Cooper



Earl Copeland



Al Craig



Bob Curtis



Jim Davidson



Jim Daxon



Mrs. Betty DeJersey



George Dewsnap



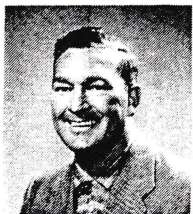
Art Dibben



Bill Duncan



Jeff Durrant



Ken Dutton



Eric Early



Claire Eatock



Tom Ebborn



Andy Edward



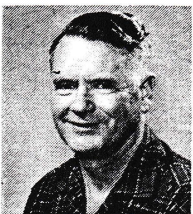
Ted Elder



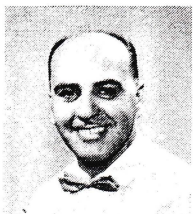
Teddy Evans



"Fab" Fabierkiewicz



George Faichnie



Gene Farion



Ross Ferguson



"Red" Findlay



Mrs. "Rene" Fleming



Les Foster



Albert Frisby



Ed Gale



Blanche Gallagher



Chester Giles



John Gilmour



Al Golightley



Jack Gomm



Eddie Gougeon



Gordon Graham



Bill Graydon



Clarence Griffith



"Curly" Hall



Stan Harding



Ken Hardman



Ivan Harris



Ken Haw



Clair Hawn



Bill Heraldson



George Hillman



Jim Hillson



Ron Hiorns



Norm Horn



Andy Horsman



Joe Hubble



Bill Humenick



Garnet Hunter



Fred Hussey



"Hutch" Hutchison



Art Inscow



Ken James



Fred Jarman



Jerry Jerome



"Reg" Jones



Gord D. Kearns



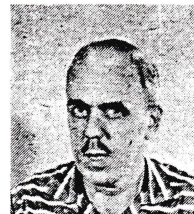
J. Gordy Kearns



Gord Keeler



Bill Kemp



Dan Kingston



Bruce Kirby



Harold Koehler



Gord Lamb



Gil Lerner



Joe Lewin



George Lindsay



Dave Lucier



Doug Ludlow



Bill Lunt



Andy MacDonald



Sam Martins



Wally Mason



Ed McCloskey



Mrs. M. McGinnis



Mrs. E. McGrath



Ken McGuire



Archie McIntyre



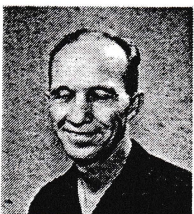
Norm McLaughlin



George McLean



Frank McShane



"Mac" McVeety



Don Morrison



Howard Mulliss



Bob Mushet



Jack Nesbitt



Walt Newbold



Karl O'Conner



"Okie" Oke



Bill Palmer



Bob Pausey



"Lus" Penrose



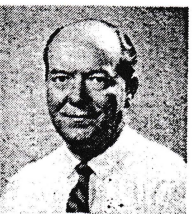
Herb Perks



Bill Pinder



Chuck Pover



Ed Pullen



Walter Reid



Les Ridley



Al Robb



Mrs. Cora Robertson



Reg Rodgers



Jerry Rusk



Jimmy Russell



Bob Sachs



Reg Sampson



Jack Savage



Bill Scarr



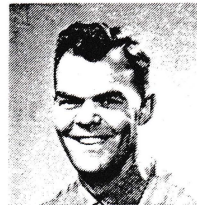
Clarence Scott



Russ Selway



Gord Shaw



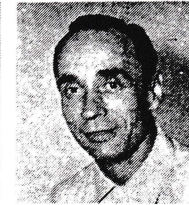
Reg Simpson



Aubrey Smith



George Smith



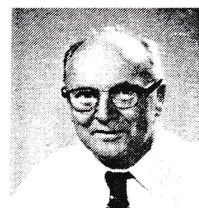
Murray Snider



Al Speir



Alf Stevenson



Frank Strugnell



Ralph Stuckey



Art Sutton



Jack Swift



Charlie Sykes



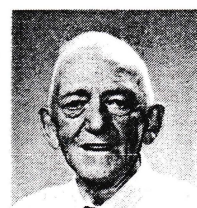
Ted Taylor



Jerry Taylor



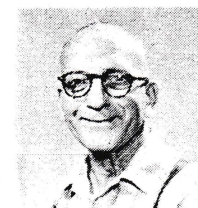
Harry Terrance



Fred Thomas



Tommy Thomas



Andy Thompson



Lloyd Thompson



Roy Trimble



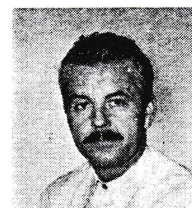
Cec Vella



Tom Virkus



Dave Wales



"Duffy" Walsh



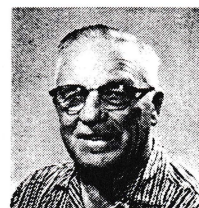
Bill Walsh



George Ward



Cliff Warren



Leo Watson



"Sam" Weller



Bill Williams



Aubrey White



Pete Willson



Len Wilson



"Monty" Woolley



"Lefty" Wright



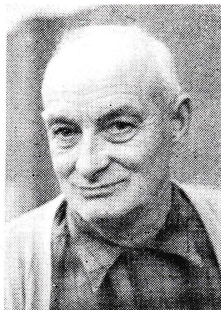
Alf Yates

*Ten-Year Club party will be
held December 3 at the Royal York*

What do you think?

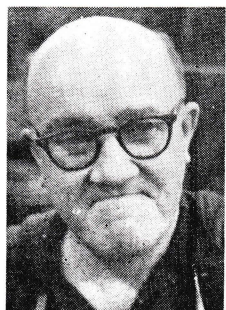
Is the art of cooking dying out due to the age of the can opener and ready mixes?

Robert Lane, Power Sweeper Operator: "The young girls can't cook like their mothers could. The food is already prepared for them and is ready in no time at all. I think it's a good thing, though, as it gives women more time to enjoy themselves. I won't say if the food's as good though."



Lorna Pulker, Order Records: "I'd say it was definitely on the way out. I think it's a bad thing too. I used to like my mother's home cooked meals when I was at home, and I think children today should have the same benefits of home cooking. The food's not as tasty out of the can."

Carole White, Industrial Engineering: "I would say that it is. More women are working now and don't have time to bake and prepare home cooking. I don't suppose it's a good thing, but then again we can obtain a better variety of food with ready mixes and a can opener."



Harold Lamb, Grinding Department, Plant 1: "My wife thinks ready mix bake goods are better than the old mix. I can't say, but I don't like canned goods myself. It's quick all right and I suppose the younger generation will get used to it. The food is still as good, but we're losing the art of cooking."

—Photos by Goodenough.



LISTENING TO RECORDS is a favorite pastime of Alex and Marg Champion now that Alex, Systems Design, Plant 1, has converted his old radio into a Hi-Fi installation. (Photos by Cliff Heckel).

Alex Champion builds Hi-Fi set for \$89.50

WITH TV pretty much of a commonplace item in the household now, the current trend has turned to Hi-Fi and stereophonic sound.

Many have built Hi-Fi units and are now dabbling with stereophonic sound, some are just setting up Hi-Fi installations, while many others are "interested in" Hi-Fi. "Sound is the thing" and we here at Orenda are caught up in the same swirl.

Two questions may come to mind. What is Hi-Fi, and, how can I afford it?

To answer the first question, Hi-Fi, according to Milton Sleeper—considered one of the foremost authorities on the subject, identifies the highest achieve-

ment of the audio art by which reproduced sounds most closely approach the original.

One of many Hi-Fi enthusiasts at Orenda has answered the second question. Rather than purchase an expensive factory-made unit, Alex Champion, Systems Design, Plant 1, built his own installation at a cost of less than \$100, and without any previous radio or Hi-Fi experience.

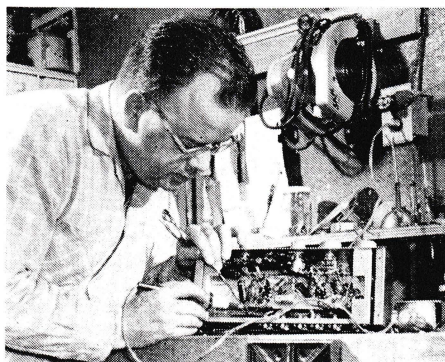
"I'd been talking about getting Hi-Fi so I could gain more enjoyment from my records," said Alex. "I talked to a real Hi-Fi enthusiast—Sherman Lindsay—and he assured me I'd get far better listening with Hi-Fi."

Bought Kit

Alex was advised to buy a do-it-yourself kit and started work on his set after the summer holidays this year. The set's now complete, and he's enjoying the result.

"You can't go wrong buying one of the kits," he said. "The one I used was first tested by the company on its female employees to make sure they could follow the instructions easily. All you have to do is a bit of soldering. Then too, I got plenty of help from some of the chaps at Orenda who had already made Hi-Fi sets."

The cost of Alex's set was: \$30 for a 12-watt amplifier; \$27 for pre amplifier controls; \$10 for a speaker; \$5.50 for



ALEX CHAMPION, Systems Design, Plant 1, is seen here soldering a connection on the amplifier unit of his Hi-Fi set.

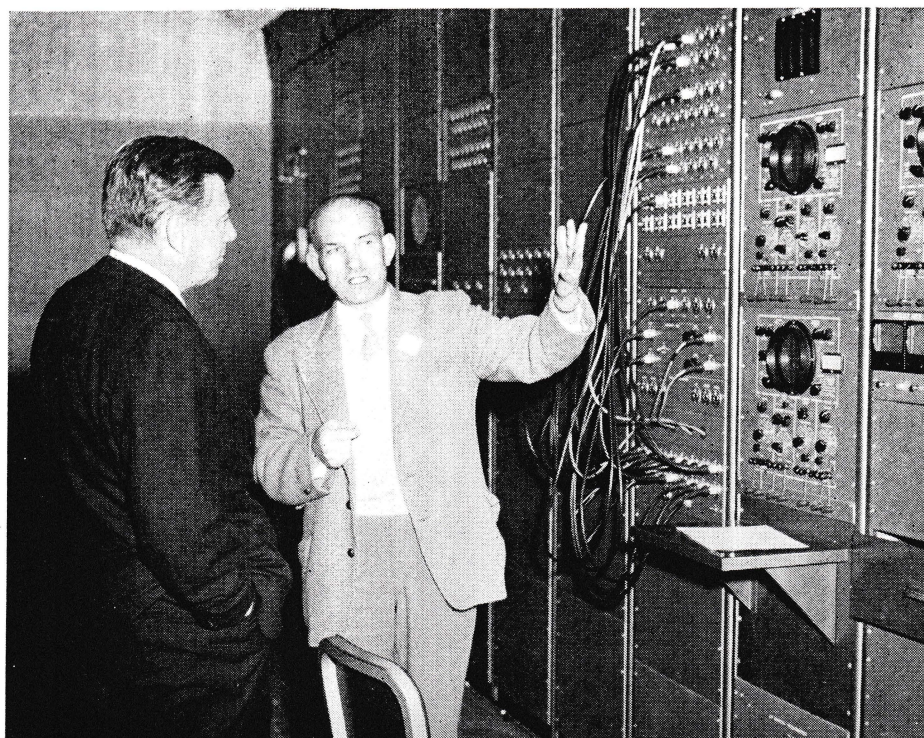
wood to make a speaker enclosure; \$11 for a diamond needle or stylus; and \$6 for grill cloth for the speaker. Alex says he spent an additional \$17 for a new record player for his daughter so she wouldn't "monkey" with the new Hi-Fi outfit.

"I had an old radio and record player cabinet that adapted itself for the changeover," said Alex. "In fact, a great many of the old radio cabinets are ideal for this set-up. However, you can always build your Hi-Fi units into shelves or book cases, if you haven't a cabinet. I took the original speaker from the old radio cabinet and put the amplifier in its place, leaving room on one side for record storage and an F.M. tuner, which I hope to get after Christmas. The pre amplifier went into the old record storage spot, while the original A.M. radio is on the other side of the cabinet. The record player is in the centre section."

More Control

The new speaker was installed in the wall opposite the cabinet—considered an ideal location for proper Hi-Fi reproduction. Alex says he now has more control of the sound by use of amplification of bass and treble sounds. On the old radio sets, the range is anywhere from 200 to 10,000 cycles. Hi-Fi gives ranges from 20 to 20,000 cycles.

Authority Milton Sleeper claims, as many Hi-Fi-ers will testify, that the more one listens to Hi-Fi, the more one hears that he's missed before. Though



SO IMPRESSED was Arthur Godfrey with Charles Grinyer's explanation of jet engine mysteries on his visit to Malton, November 17, that he invited Orenda's Vice-President, Engineering, to tell the story on his nation-wide TV network show. Here they are in the Central Recording Room Development Test Cells. (Photo by Len Goodenough)

listening, you will develop your critical capacities. What satisfies today, may sound inadequate six months hence.

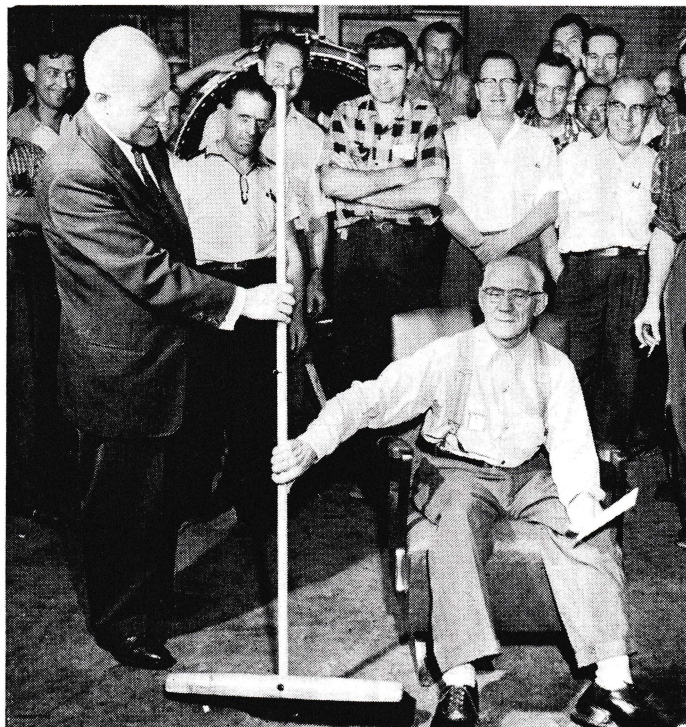
"This is quite true," said Alex. "You either stay at home and only listen to your own set, or you get to work and improve your installation. That's one ad-

vantage of a home-made set over a factory-built job. However, I'm quite happy with mine for the moment."

Thus for \$89.50, and a \$17 record player, Alex is able to enjoy better recordings and is right in style. He's got—"sound".



DISTRIBUTION of the Christmas Party gift tickets and program will begin next week. Here Chairman Dave Geraghty, with help from Ivy Newbound (left) and Eleanor Beatty insert the programs and tickets in envelopes. (Photo by Len Goodenough)



RELINQUISHING HIS BROOM. Sweeper John W. Davey hands over his broom to Bert Marcouiller, Superintendent Assembly, and prepares to take it easy in the chair presented to him by fellow Plant 1 workers two weeks ago. (Photo by Len Goodenough)

Arrow best available says Crawford Gordon in CBC-TV appearance

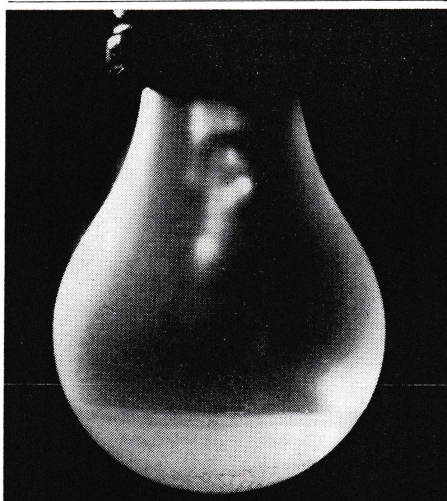
The following is a statement by A. V. Roe Canada Limited President Crawford Gordon presented on CBC-TV News at 6:45 p.m., Tuesday, November 25, in connection with Air Marshal Roy Slemmon's recent remarks that there is a definite need for the CF-105. (See page 2).

"We are very glad of course, but not surprised at what Air Marshal Slemmon said and also Mr. Pearkes. Right from the beginning we have maintained and said so publicly that there was a continuing need for the manned interceptor, and the Arrow was the best available and would be ordered into production.

"Now, this is not to say there is not also a need for a Bomarc-type missile. It is not one or the other. The missile complements the manned interceptor by providing defence in depth. This has been and still is the established policy of NORAD. It has been stated and restated by most responsible military authorities—General White, Chief of the U.S. Air Force; Mr. Quarles, Assistant Secretary of Defence for the U.S.;

and even their director of guided missiles.

"Once this fact is recognized, the Arrow becomes the obvious choice for Canada. It was designed specifically to meet the RCAF special requirements. It was designed and is being built right now at Malton by Canadians. And taking into account this important fact—that it gives jobs to thousands of people in some 600 companies in Malton and elsewhere—it is far cheaper than any substitute we could buy or build."



CONTROVERSIAL LIGHT BULB. There is still no definite answer as to how water seeped into the above light bulb, but as yet, no one has challenged a theory advocated by Jim Wooland, Personnel Department, which appeared in a recent issue of *The Orenda*.

Arrow-Iroquois boosters

(Continued from Page 2)

decision," writes the editor. "He would say, 'It is reasonable that we cannot afford powerful offensive weapons such as a Strategic Air Force or ICBMs, but we can afford to defend ourselves.' This is merely another way of saying that we can afford to be independent—to be a nation."

Aircraft division for Hawker Siddely Group

Sir Roy Dobson, Managing Director of the Hawker Siddely Group, announced this month that an Aircraft Division has been established of the various aircraft companies in the Group.

The initial appointment is that of Mr. W. Humble, who has been named International Sales Manager. He will be responsible for the co-ordination of the overseas selling activities of the operating companies of the division, whether these activities are progressed directly by the operating companies or through the various agents overseas.

Also announced was the formation of an Industrial Division—comprising the Group's electrical engineering companies and the oil engine companies. Mr. Michael Clear has been named International Sales Manager of this division.

Sir Roy also announced the appointment of Brigadier L. L. Cross, C.B.E., as Public Relations Officer to the Group. Brigadier Cross, who is retiring from the Army, was previously Chief of Public Information at Supreme Headquarters Allied Powers Europe.



October Safety Drive target met by Orenda

The 1958 October Safety Drive is more than reaching its target for the first three weeks of the month, stated Safety Engineer John Swanson last week.

"Only one compensable accident occurred during that period," he said, "and that's much better than the three per month average for the preceding nine months."



ALL TOGETHER NOW GIRLS. Miss Fulcher, Walter Thornton instructress, is showing the girls in this picture how to walk properly during one of the Self-Improvement courses held Tuesday nights at Orenda's Plant 2 cafeteria. Left to right are: Lynn Thompson, Pat Ure, Faye Flower, Nancy Crisp, Rene Fleming, Ann Dalziel and Eileen Hewitt. Another five-week course is being planned after New Year's. (Photo by Len Goodenough).



Sports scene

—by John T. Kennedy

The last two Sunday games have been real close, and show a well balanced league. On November 23 the *Turbo Jets* moved into first place by downing the *Flyers* 3-1. It was the *Flyers'* first loss of the season having previously won three and tied one. Don Allen started the scoring in the first period for the Jets assisted by Don Sheardown. Norm Fenton, assisted by Sheardown and Jim Thompson, assisted by Ted Nelson registered the other two in the second period. Fred Buchanan unassisted on a long shot from the blue line scored the *Flyers'* only goal late in the third period only to rob Ken Marchant of a well earned shutout.

In the other game, *Iroquois Rangers* edged the luckless *Flashers* 3-2. Goal getters were Ian Flowers from Bill Bradley, Barry Inscow from Bradley and Roy Lyben from Inscow for the Rangers, while Zeke McCandless scored one unassisted, and assisted Ken Woods on the other for the *Flashers*.

Results of November were: Turbo Jets 2, *Flashers* 1 on goals by Don Allen and Jim Thompson for the Jets and Zike McCandless for the *Flashers*; second game — *Flyers* 3, *Rangers* 2, goals for *Flyers*, two for Fred Buchanan and one for Don Aubin, for the *Rangers* Bill Bradley and Corrigan.

Bowling

Holding top honours for season high scores in the *Toronto Men's* league as of November 17 were: George Henderson, high average, with 225; T. Baron, high triple with handicap, 932; Art Dodd, high single with handicap, 418; Bill Mitchell (Rejects high triple flat, 876, and George Henderson, high single flat, 372.

Results of November 17 still showed the *Rejects* holding on to top place with 53 points. *The Rookies* jumped into second place with 51 points as they took an easy seven pints on November 17 when the *Tin Bashers* defaulted. *Rinky Dinks* are third with 49 and the *Owls* fourth with 45. E. Hindle of the *Owls* rolled the high for the night, 845, backed up by a 374 single. On November 10, Ed Sankey of the *Rockets* posted the high triple with 777, while Jim Michin of the *Rookies* took the single with 345.

The *Toronto Mixed* league with three nights to go in the first series as of November 19, still had only 15 points separating the first place *Off Shoots* (55 points) with the sixteenth place *King & Queens* (40 points). Top average bowlers in the league for the ladies as of November 19 are: Mary Dwyer 213, Joyce Livingston 204, Mary Muir 196, May

Law 190, Kay Biggar 189, June Horton 186, Lorraine Kennedy 186; for the men — Harry Lester 223, John Kennedy 222, Bill Main 221, Bill Robertson 221, Ron Muir 220, Bob Byerley 219, George Henderson 219.

In the *Brampton Men's* league, L. Penrose took the high single for November 18 with 356 and S. Balacki for November 11 with 330. Season's high scores as of November 18 are: R. Brown 881, High triple flat; N. Lundy 846, high triple with handicap; L. Penrose and F. Cuthbert 346, high single flat, P. Young 362, high single with handicap.

Hockey Festival

Plans have already got underway for the big *Hockey Festival* at Maple Leaf Gardens next spring and the date set is March 6, 1959. The big attraction of course will be the big game when Orenda's best hockey players will battle it out with Avro's best. Orenda is once again placing their hopes on the big guns of Dave Irons, Bill Chard, Frank Stephenson, Joe Scattolon and Roy Lyben. Frank Ptashnik, last year's playing coach, will be taking the task on again this year but will be devoting all his time to the job of coaching from the bench only.

Once again the little *Duffers* will play the first game and the age for the boys is 8-10. Three suggestions were made for the second attraction, a girls' hockey game, an old man's game, or a skating carnival. Of course the big event of the night will be a draw for a new 1959 car along with other numerous prizes.

Results of Orenda fishing competition

The Orenda Recreation Club *Fishing Contest* committee has announced the following winners of this years contest:

Large Mouth Bass—Hank Courtney 1st, Don Bailey 2nd, Marcel Brad 3rd.

Small Mouth Bass—H. H. Oake 1st, Ted Heather 2nd, H. May 3rd.

Muskellunge—Julian Shaw 1st, Len Allen 2nd.

Pickrel—C. Warren 1st, F. Robinson 2nd, Doreen Calley 3rd.

Pike—Les Galley 1st, V. Mason 2nd, P. Harvey 3rd.

Brown Trout—B. Spowart 1st, Gordon Thompson 2nd.

Rainbow Trout—R. Spowart 1st, L. M. Giles 2nd.

Want Ads

FOR SALE

Boy's Raleigh bicycle — racer. Good condition, speedometer. Several extras. CH 4-0074.

Duro pressure pump complete, also Sump pump. Reasonable. BU 6-2658.

Electric stove. Gurney 40" warming oven — in good condition. ME 3-4327.

Girl's white figure skates — size 5. Boy's hockey skates — size 4. Like new. BU 6-4631 evenings.

R.J. speaker enclosure with 10" 8 OHM Stentorian speaker. Blonde finish, 18" legs, \$50. Eico Preamp HFGI self powered, \$40. CL 1-4581.

Electric stove — heavy wiring; small wood or coal stove (white enamel); space heater; and 200 gallon oil tank. Also skates, sizes 4 and 6. BU 6-2488.

CARS FOR SALE

Chevrolet 1951, good condition, priced for quick sale. 703-W Bolton.

PROPERTY FOR SALE

Malton, 22 Merritt Ave. — \$10,500. Down payment \$1,500. 6 roomed house, nicely decorated. Aluminum screens and storms, close to schools, oil heated. For information Brampton Glendale 1-4013.

WANTED

6' or 8' maplewood toboggan, also lady's adjustable dress form for size 12. HO 3-0566.

Child's playpen, size 4' x 4'. Also chrome high-chair. In good condition please. CH 6-3333, evenings.

ACCOMMODATION WANTED

Unfurnished large basement apartment to rent, use of laundry room and garage. Nr. Thistle-town. Reasonable rent. Atlas 8-1981 after 5 p.m. 5 room upstairs apartment, at Hornby. 15 miles from plant. Separate entrance. TRIangle 8-4739 Milton.

Basement apartment — four nicely furnished rooms, very dry and warm. Self contained \$18 per week. CH 4-9094 Rexdale.
Room or room and board for one or two persons in Cooksville. AT 9-2300.

Apartment to sub-let overlooking the Humber. 2 bedrms, balcony, elevator, broadloom, refrigerator, stove and washing facilities. Indoor and outdoor children's play area. Heated garage optional. \$115 per month. 33 Riverwood Parkway, Apt. 308, South Kingsway. BE 3-0705.

House for rent in Malton. 6 rooms, within walking distance from four corners. Close to schools. Brampton Glendale 1-4013.

Basement apartment for rent, unfurnished. 4 piece bath, parking facilities. Private entrance, business couple. CH 4-8200, Mrs. Barr, Dixon Road.

Early space planning

Engineering studies of space flight potential were started by an aircraft company in 1943 — during the middle of World War II. U.S. satellites circling the Earth today owe much to the vision of the aircraft industry in starting formal planning for these first steps into space 15 years ago.

Lake Trout—Gordon Stewart.

Speckled Trout—V. Boroskyński.

In the children's classes:

Small Mouth Bass—Tommy Cowan 1st, Glen Selway 2nd, Patricia Kaspard 3rd.

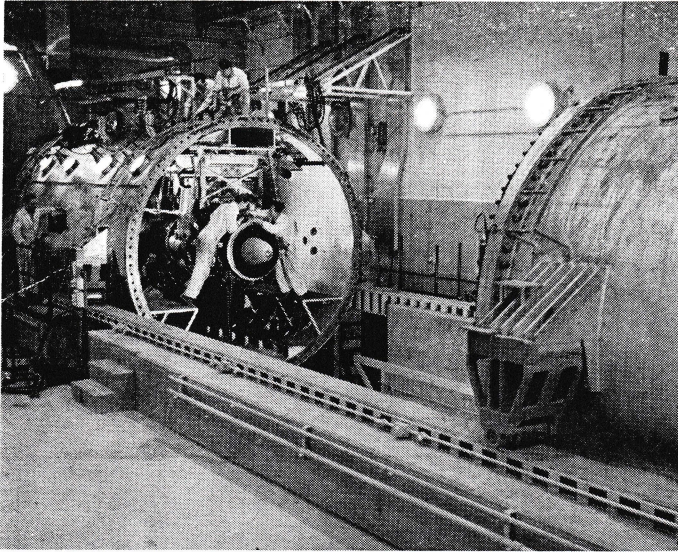
Perch—G. Kaspard.

Pike—G. Kaspard 1st, P. Kaspard 2nd.

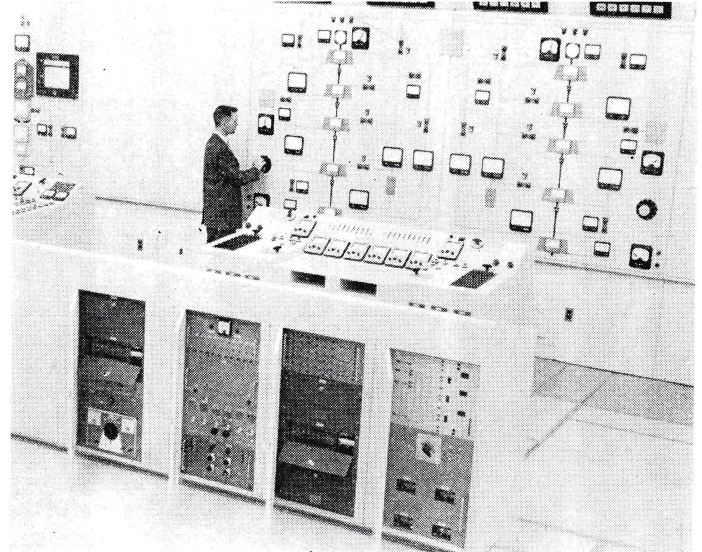
Pickrel—G. Kaspard.

Prizes are to be picked up at the Recreation Office.

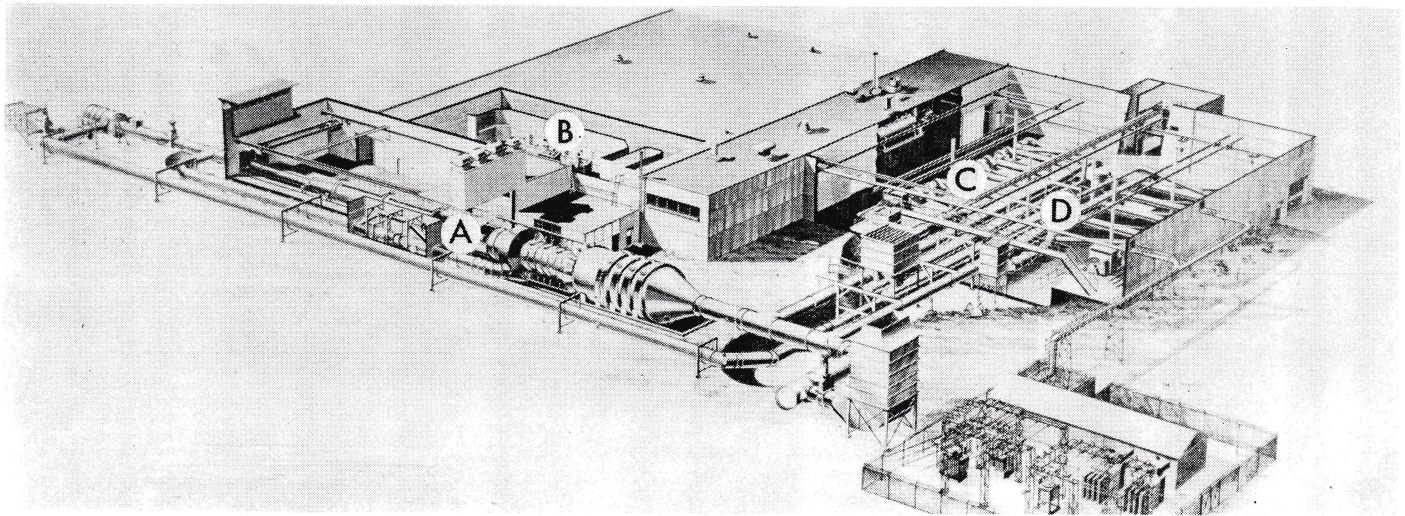
High Altitude Test Facility



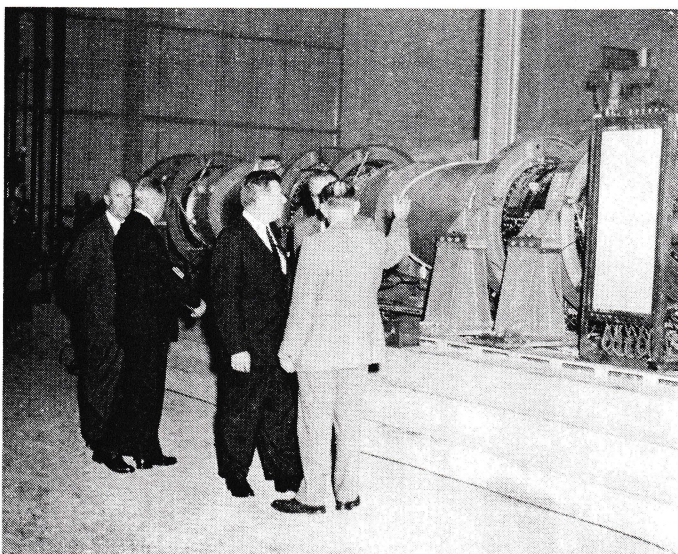
A—Engine mounted in wind tunnel.



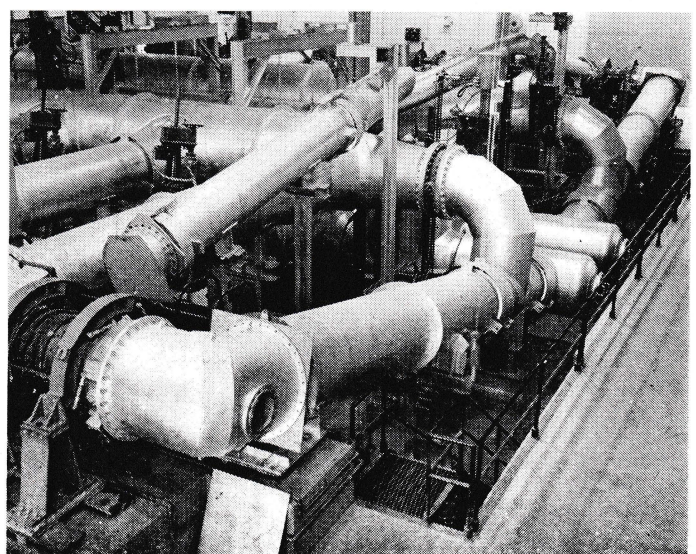
B—Graphic panel in the Control Room.



Architect's cutaway drawing of the High Altitude Test Facility at Orenda Engines Limited.



C—Godfrey views compressor line.



D—Overall view of giant compressor room.