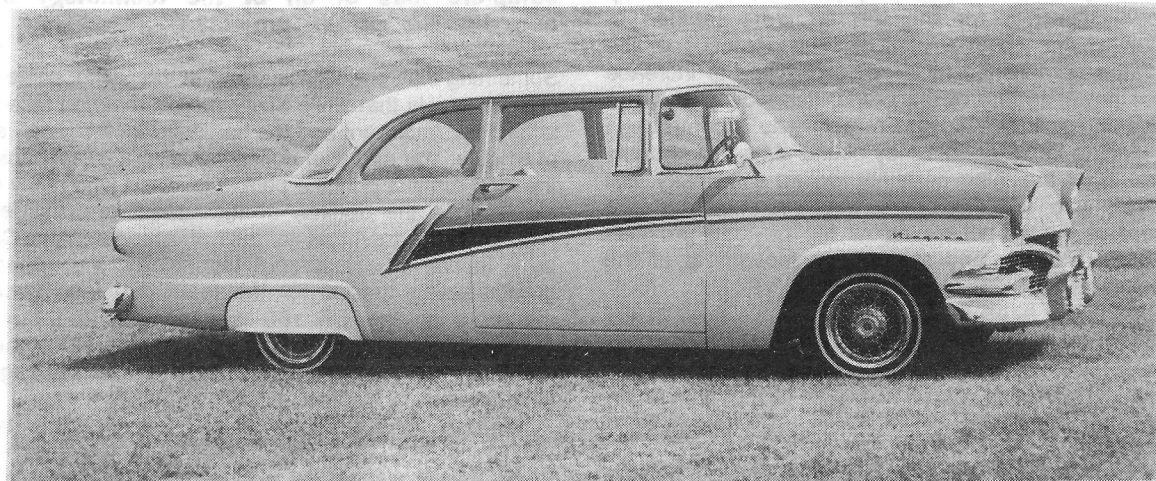


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# Pre-Flight



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## James Charles FLOYD: Questions & Answers

The major Canadian companies seem to have been involved in some "weird and wonderful" projects such as those done by Spar (satellite antenna and the Canadarm) and Canadair (reconnaissance drones), the most famous one for A.V. Roe being the Avocar or "saucer". Could you tell us a little about the projects in which you were involved which were the most challenging, the most fun or the most "weird and wonderful?"

This is a very long and involved question which is difficult to answer in a few words, since I would have to look back over sixty project-packed years. I think that I should put the record straight on the A.V. Roe "saucer" project. In fact, I had absolutely nothing to do with that project, by choice! The reasons would involve too long a story, but in a nutshell, while I had a personal friendship and respect for John Frost, the designer of the "saucer", I could not understand the reason for his enthusiastic expectations for it. When I was appointed Chief Engineer of Avro in 1952, we were so snowed under with our three main projects, the Jetliner, the CF100 and supersonic fighter studies that I was not

James Charles Floyd

( continued on following pages )

*The mission of the Aerospace Heritage Foundation of Canada is to accurately document  
Canada's achievements and exploits in aviation and aerospace and to preserve them  
for future generations.*

RL 890-11996



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The Aerospace Heritage Foundation of Canada (AHFC) is a federally-chartered not-for-profit organization. While the current emphasis is on Avro and Orenda, the future activities of the Foundation will cover the complete history of Canadian aviation.

✓ Western Canada contact please contact:

Michael L. Bullis, 164 Berkshire Close NW,  
Calgary AB T3K 1Z4. Phone (403) 274-7497.

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## FROM THE PRESIDENT

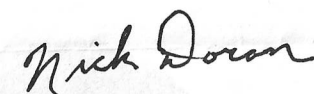
As you read this issue of Pre-Flight, we will be into the month of February - and hopefully, some warmer weather.

At our last Board meeting, priority was given to the sale of tickets for the 1956 Niagara. If you wish to assist in the sale of tickets, drop me a line for a book or two.

To those who have responded to early renewals - thank you. To those who have not, please do so. Only you can keep this Foundation going.

Membership (1996) cards and incentive gifts will be in the mail shortly.

Look for new and interesting features in Pre-Flight in 1996!



Nick Doran, President AHFC

## Floyd: Questions and Answers, continued:

prepared to take on this doubtful (in my mind) project and divert energy from our mainstream engineering effort to it. I therefore reached an agreement with my boss, Fred Smye, then Vice-President and General Manager of the aircraft Division of Avro, that John and his team on the saucer be set up as an entirely separate group, reporting directly to Smye. That was agreed and I had nothing further to do with that project.

I would have to choose the Arrow as the most challenging project in which I was involved, overwhelmingly so at times. In fact, the word "challenging" hardly describes some of the mind-boggling problems that we had to overcome at that project. Looking back, although we hedged all of our bets with extensive testing prior to flight, it was little short of a miracle that the flight testing worked out so well, with so few major problems.

Without any doubt, the most fun was the Jetliner project. The small team on that aircraft was the most dedicated bunch of guys and gals that ever walked a hangar floor, with a combined sense of humour that would have done justice to an Irish funeral. We really thought that we were putting our beloved Canada in the number one place in civil aviation. We lived and breathed that aircraft, until we all felt part of it. It was also challenging, especially since it was our first project to fly and the fate of the company and ourselves virtually hung on its success. The Jetliner was also the first project on which the buck stopped firmly at the feet of "yours truly". The Jetliner days were the best and most enjoyable of my life and I remember the wonderful "Jetliner gang" with great respect and affection.

Although I can't even remember them all, one of the most unusual projects that ever crossed my path was a thing called a "helivector". We were hiring for a senior administrative post in engineering at Malton and I was interviewing an interesting guy who had a great deal of experience in the aviation field at Martin and other companies. He had also been a test pilot on the Clipper ships as they were called. His name was L. C. McCarty ("Mac" to everyone). I took him to lunch and over the fish and chips he mentioned that he had designed a powered aircraft that weighed less than a man! After picking my fork off the floor, it must have been obvious to him that he hadn't exactly convinced me that he was our man by this startling statement, he trotted out a picture of the project (in flight) and the bells and whistles rang and I immediately lost interest in the fish and chips.

His design consisted of a small stand-on platform with contra-rotating props underneath, powered by a small Kiekhæfer engine. Under the propellers was a blow-up landing pad. Controls for the aircraft were located in "handlebars" at the top of a vertical shaft. Rotation of the platform was accomplished by slipping clutches to increase or decrease power to one of the props, depending on which way you wanted to turn. Forward motion was accomplished by simply leaning forward! This may sound a little hazardous, and on first sight the thing certainly looked a bit risky, but those of you who are engineers will recognize that the arrangement of the propellers below the payload provides some inherent stability and reasonable movement of the payload causes the device to "scoop up".

Mac was duly hired as administrative assistant to the Chief Engineer (at that time, your truly) and he invited me to fly the device at the estate of one of his US Army friends in New Jersey. A number of *Helivectors* were at that time under construction for the US Marines and a couple were already being flight tested.

My wife and I arrived at the field one week-end in a howling February gale and one of the Marine pilots was flying the *Helivector* at around five or six feet. Mac explained that height was limited by the underpowered engines that were available for the prototypes. After some rather startling gyrations by the pilot in an effort to land, the screaming contraption by the waiting group in the high wind, it was my turn!

Getting on that platform in that wind was just about the last thing that I wanted to do at that moment, but Mac assured me that he had flown it that morning and that he had no problem controlling it. This was not totally reassuring to me because Mac had been an experienced test pilot whereas the only powered aircraft that I had flown was the Avro Flying Club's Fleet *Canuck*! Anyway, with my wife and the others watching, there was no way that I was going to "chicken-out". So I patted my St. Christopher medal, stepped onto the platform and started the engine, albeit with some trepidation.

As it happened, the ten minute flight was a great deal of fun, the aircraft never going above four or five feet even at full throttle and the controls worked surprisingly well, with no feeling of "topple-over" during forward or backward flight. My main problem was the bitter cold and the fact that my topcoat made a very efficient "sail", which meant that I had to assume a marked "lean-over" position to counter the wind, pushing me toward the trees!

After the flight, we talked over the project with the Marine and his Colonel, who seemed to think that the device would be ideal for scouting over enemy territory. I couldn't help thinking that this noisy, low-flying contraption would be a sitting duck for the enemy. But perhaps they would be so consumed with laughter at the antics of this "magic carpet" that they would not be able to aim straight!

I think that about 24 *Helivectors* were delivered to the US armed services for testing. Hiller had also come up with a similar device. But to my knowledge, the idea was never exploited or followed up into production. It would have made a great theme-park attraction, although the adjacent hospitals might have had a few extra customers. Mac was a very innovative designer and later designed another strange-looking device called a "Bolacopter". But perhaps the story of that should be left for another time.

**Did the total destruction of the Arrow, including all drawings, reports, et cetera, result in the complete loss of all of the technology built up over the life of the project?**

Something that one learns early in life, with some people than others, is that while every project that you take on is, or should be, important and the hardware is the final evidence of whether you and your colleagues did a reasonable job, in the long run it is only the people involved who really matter.

While the Jetliner abandonment and its destruction represented a monumental loss of opportunity for Canada to be a leader in civil aircraft technology, the project was a great training ground for the team that later became key members on the CF 100 development and the CF 105 program. In other words, the skills generated on the Jetliner project were not lost but passed on to colleagues and younger staff at Avro.

Similarly, the tragedy of the arrow and the scandalous and vandalous destruction of all hardware and software following Black Friday was a tremendous blow to the technological base of aviation in Canada, but the *real* tragedy was the loss to Canada of most of the people involved in the Arrow program, a team which was recognized as among the best and most talented in the world. Having said that, while their combined skills as a carefully integrated team were indeed lost to Canada for all time, their individual skills and knowledge were applied to other projects in Canada and to leading-edge of technology projects in the USA, the UK and Europe and many other countries throughout the world.

What I think I am trying to say is that there is a kind of "conservation of technology" invested in people which largely ignores the destruction of the subject hardware. That was certainly the case with the Arrow fiasco, Canada lost, other countries benefitted greatly.

This was evident in the comments in a book titled "Apollo: The Race to the Moon", published in 1969 by Simon and Shuster of New York. Authors Charles Murray and Catherine Bly-Cox had this to say about the contribution to the American space programs made by the ex-Avro team of Canadians that went down to NASA after the cancellation of the Arrow program:

"As the Space Task Group's burden was threatening to overwhelm it, the Canadian government unintentionally gave the American space program its luckiest break since Vernher von Braun had surrendered to the Americans. The Canadians never gained much public recognition for their contribution to the manned space program, but to the people within the program their contribution was *incalculable*."

The same book also quotes one of the original American Space Task group engineers as saying about Canadians:

"They had it all over us in many areas ... just brilliant guys. They were more mature and they were bright as hell and talented and professional to a man."

While these comments were specifically about the ex-Avro team that went down to NASA, they could very well have been applied to the other ex-Avro teams that made their mark in other countries. I know that the small team that went with me to the Advanced Projects group in the UK were highly respected and acknowledged to be among "the best in the business."