

## ELIE CARAFOLI – PROFESSOR, ENTREPRENEUR and PATRIOT SCIENTIST

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### Professors

- Nicolae Enache de la Olt – professor of mathematics and astronomy at the Dealu Monastery. The first Romanian who obtained a doctorate degree in aerodynamics at the Sorbonne (1908)
- Ion Ionescu - Bizet – professor of strength of materials and metal structures at the Polytechnic School of Bucharest, one of the founders of the Mathematical Gazette
- Paul Painlevé – professor of mathematics and fluid mechanics at the Faculty of Sciences in Paris
- Albert Toussaint – professor of experimental aerodynamics and director of the Institute of Saint Cyr

*(“I have seen farther than others because I stood on the shoulders of giants”  
- Isaac Newton)*

### First achievements

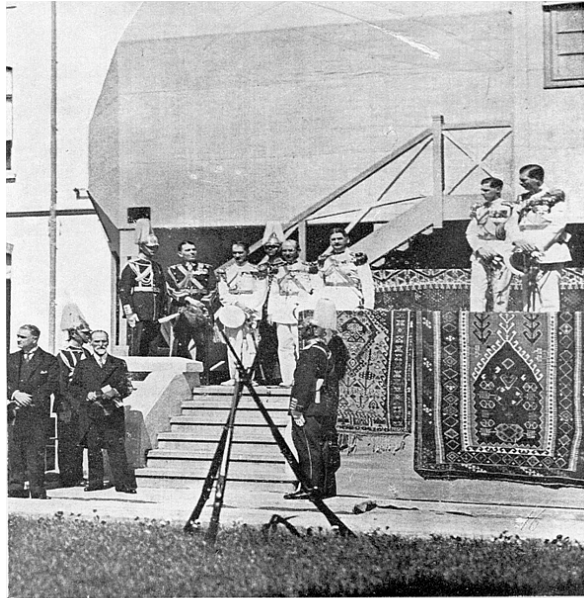
- 1924 – Degree in physics and mathematics in Paris
- 1928 – Ph.D. in Physics from the Sorbonne with a thesis entitled “Contribution to the sustentation theory in aerodynamics”
- October 1928 – He established the Department of Aerodynamics and Fluid Mechanics within the Department of Electro mechanics at the Polytechnic School of Bucharest
- 1928 – His first book, “Aerodynamics of aircraft wings”. Other books and more than 200 scientific papers will follow.

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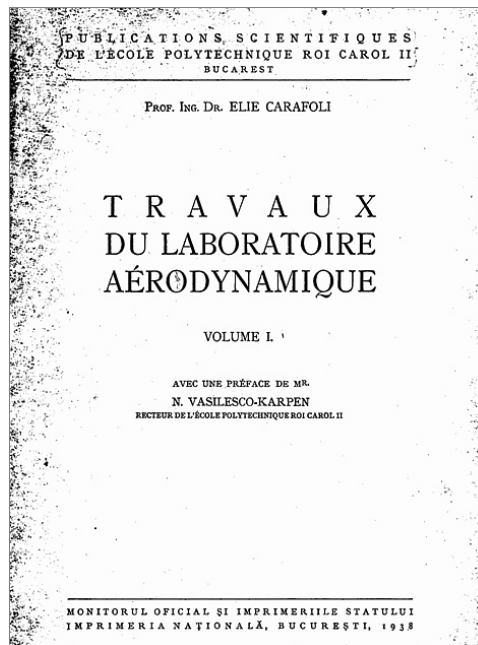
\* FRAeS

**The inauguration of the wind tunnel at the Polytechnic School by King Carol II (1931); the wind tunnel was later also visited by L. Prandtl**

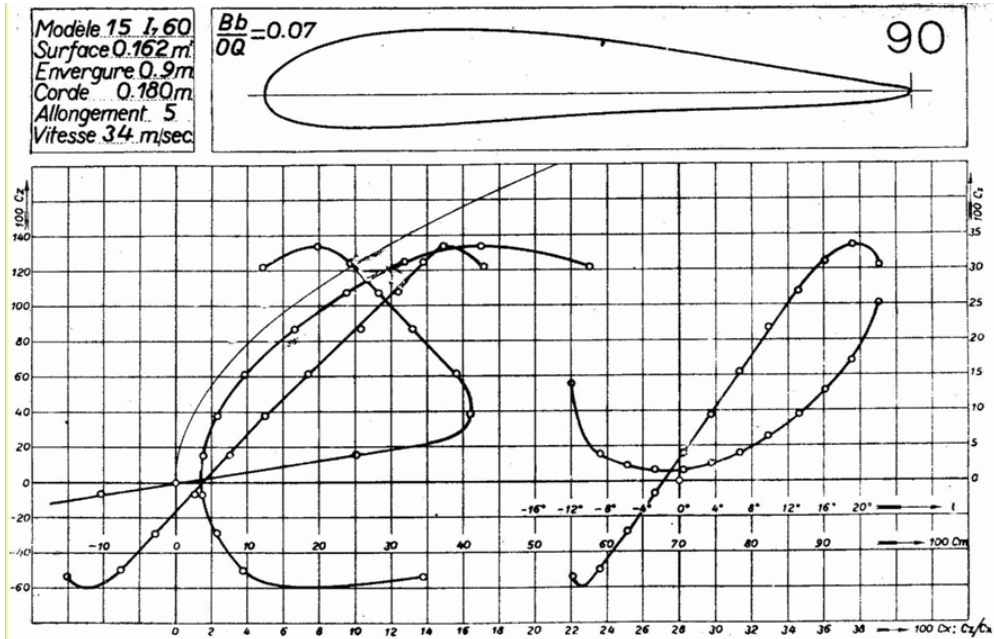


Inauguration du tunnel en Mai 1931

**Cover of his volume of experimental results obtained in the tunnel at the Polytechnic School of Bucharest (1938)**

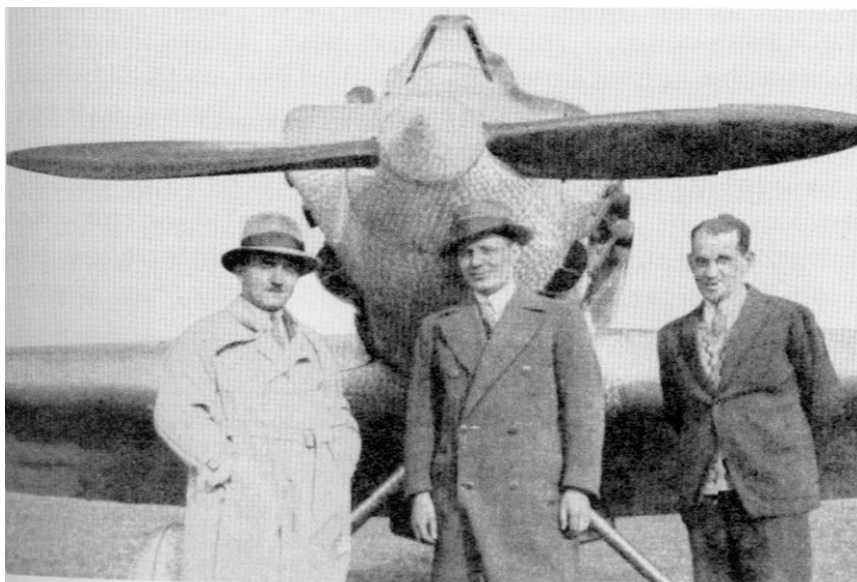


**Experimental Polars of Carafoli profile (with rounded rear edge) obtained in the wind tunnel at the Polytechnic School of Bucharest**



**Successes in Romanian Aircraft Industry**

- Chief engineer and then director of the aircraft factory IAR-Romanian Aeronautical Industry of Brasov, where he conceived, designed, built and tested several types of aircraft such as: IAR-CV 11, IAR-13 IAR-14, IAR-15 and IAR-16.
- Technical Adviser of LARES airline company- State run Romanian Air Lines
- Director and owner of the “Romanian Mecano - Chemical Plants” of Mija - Aviation weapons (“an unarmed military aircraft is not worth a great deal”)
- General - Director of the Institute of Fluid Mechanics “Traian Vuia” of the Romanian Academy

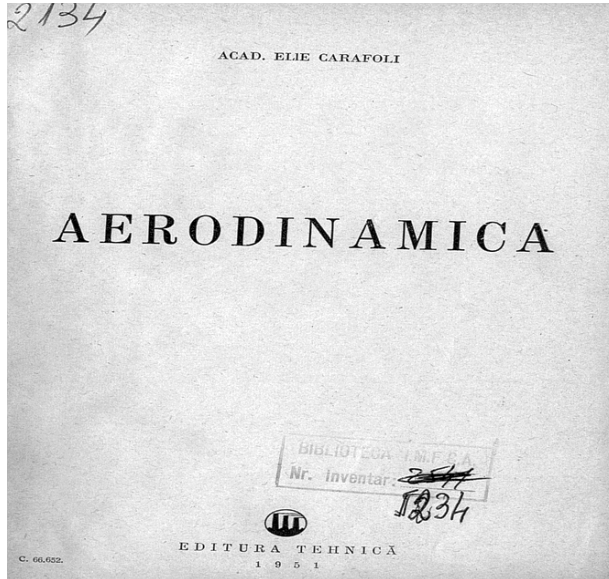


Eng. Lucien Virmoux, eng. Elie Carafoli and eng, Dumitru Barbieri in front of the IAR-11CV aircraft.

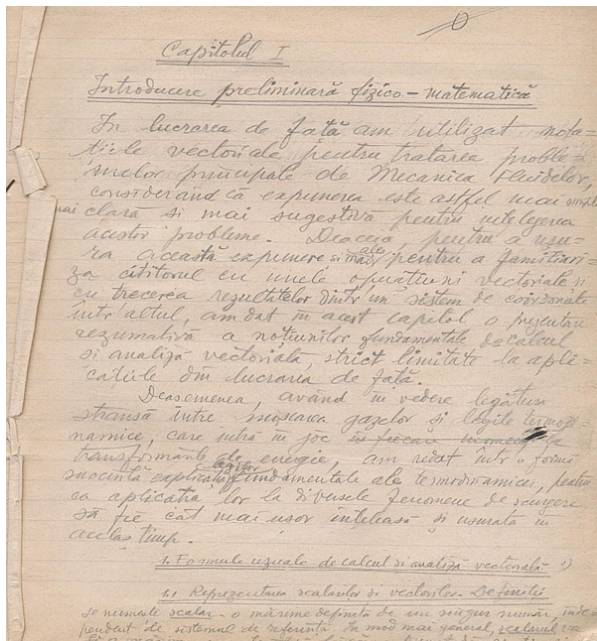
**Major academic achievements  
1948 Academician**



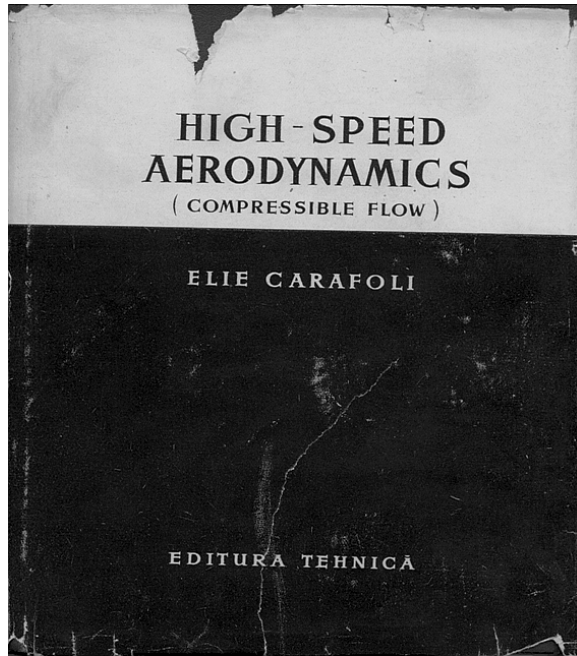
“Aerodynamics” (1951), translated into German (Berlin 1954), and Russian (Moscow 1955)



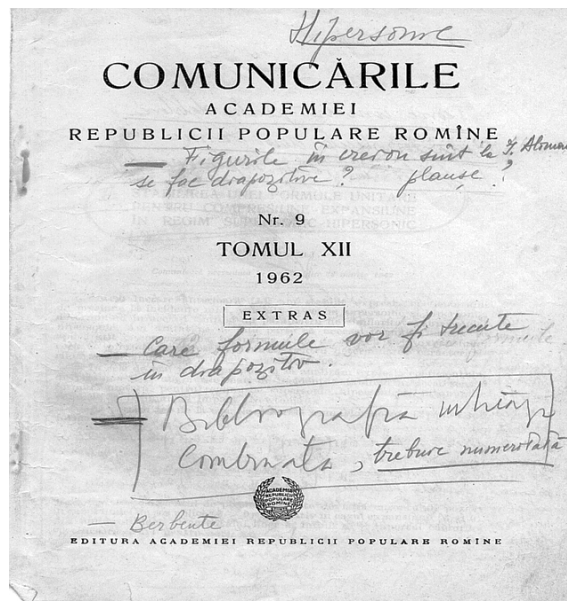
First page of the manuscript “High Speed Aerodynamics”



**High Speed Aerodynamics (1957), translated into Russian (1958),  
English, Chinese, etc ...**



**One of the more than 200 articles  
(the supersonic-hypersonic “unitary formula” with C. BERBENTE)**



**With Henri Coanda at the the Polytechnic School of Bucharest**



**International recognition**

- President of International Federation of Astronautics (1968-1969) during the lunar landing of “Apollo 11”
- Honorary Fellow of Royal Aeronautical Society (HonFRAeS)
- Medal “Gauss” Braunschweig, Germany - and much more ...

**Elie Carafoli and his students**

Course of Subsonic aerodynamics for the third year, 1970

- Each more important notion was pronounced in Romanian, French, English, German and Russian (he was also helped by his teaching assistant Corneliu BERBENTE)
- During exposure all seems hard to understand, but after re-reading the lecture notes at home, everything became clear. There was no need for manual, only the notes written on the board were sufficient to understand and learn.

- The professor did not give a failing grade to any student. If a student was in this danger, he sent after him and gave him the mark 5. (*"- maybe you have a girlfriend, what would she say if you fail the exam? I give you a 5 and I'm sure you'll study this summer"*).

Did he act right or did he act wrong? Professor Victor Pimmsner obtained each year a rich "harvest" of students failing to get their remove. Those who failed the exams and had to repeat the year, after masquerading as victims of the communists in 1989, became ministers, state secretaries, executives.

### **Elie Carafoli and the mathematicians**

Although having a solid mathematical basis (see all books he wrote), he didn't appreciate the sterile works without practical applications developed especially by engineers lured by the perspective of solutions existence and uniqueness.

*"I want to pass the bridge, to know if it breaks or not, I don't 'want to hear about the solution existing and possibly being unique"*

### **Elie Carafoli and lawyers**

- *"Someday, an aviation engineer took an exam to obtain a driving license and failed. On the contrary, a lawyer obtained the driving license very easily. Why was that? For aviation engineer makes use of his brains. "*
- *"When I first wanted to travel by plane, I stood in the line because the plane has a single passenger seat. The person in front of me got into the plane, the pilot made a turn and the plane crashed. The passenger was a lawyer."*

### **Elie Carafoli and the history**

*"La petit histoire fait la grand histoire"*

If he asked us to calculate something laborious and we told him that it would take a long time, he gave us the example of General Berthelot who once was asked when the area received as a gift from the Romanian state would have walks with secular trees as in France, and the General answered:

*"Commence demain !"*



### **Elie Carafoli and the Polish people**

- He was the victim of the PEZETEL business. The Romanian Army bought Polish aircraft with much weaker performance than those produced by IAR
- It was a scientific dispute with Professor Witoszinsky (Witoszinsky's compression formula) arbitrated by Th. Von Karman. Elie Carafoli was right.
- "The Polish women are hard drinkers" (private discussion)

### **Elie Carafoli and the Royal House**

He was appreciated by Carol II. When the industrialists Malaxa and Max Auschnit wanted to take his business of Romanian Mecano-Chemical Plants of Mija the King told them: - It was the idea of this guy, leave him alone. It seems that the feeling was mutual. He used to say about Carol II that he was smart. He gave the example of King's answer to the question asked by Sejm Marshal why were they not met in Suceava station with the Polish national anthem when they fled to Romania in 1939:

"BUT WE DID NOT EXPECT YOU SO SOON"

### **Elie Carafoli and the folklore**

- He loved Romanian and Macedonian-Romanian folk music
- He knew piquant details of popular music performers
- At his 80<sup>th</sup> anniversary celebrated at the Romanian Academy he invited a researcher from the Institute of Ethnography and Folklore, who talked about the myth of Aurel Vlaicu in poetry and popular songs.

### **Elie Carafoli and Tito**

He was asked to sign an article in "Scanteia" newspaper, against Tito.

*"I could write it, but what would Tito said about me?"*

This presentation was meant to be a copy of Elie Carafoli's one, given at the Romanian Academy in 1982 on the occasion of the celebration of his 80 years of life. Academician Ion Anton then President of the Academy noted:

*"We would have expected to a sober presentation, slushy and full of nostalgia, but it was tonic and youthful, like a glass of good champagne"*