

# **ION STROESCU (1888-1961)**

## **A MAN and A LIFE – for a passion!**

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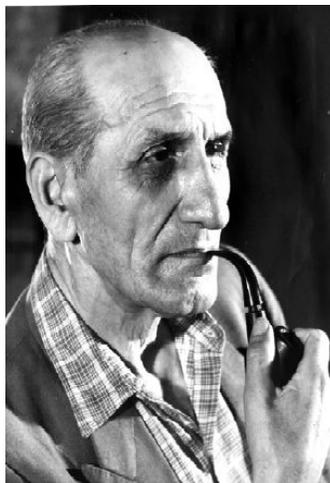


Fig. 1. Ion STROESCU (1888/1961)

Mr. General Director,

Dear colleagues, esteemed audience,

Please allow me to begin by expressing my thanks and congratulate our hosts, especially the General Director of INCAS, Mr. Catalin Nae, PhD. Eng., for organizing this homage session to celebrate 50 years from the death of Ion Stroescu.

I also want to present a salute and bring sincere wishes of success from the part of the Romanian Committee for History and Philosophy of Science and Technology (CRIFST) of the Romanian Academy.

Before starting the presentation I want to inform you that among us today we have Mr. Alin Ludu Dumbrava, who, a few years ago while walking to his house one night, had the flair and inspiration to recover from a garbage container on the sidewalk a few packages containing papers. They were probably just a part of a personal archive belonging to Ion Stroescu.

I convey to Mr. Ludu my sincere thanks and our congratulations for his gesture, because the documents, after their reconditioning and processing, will provide a much more insightful view of the life and work of this exceptional Romanian that was Ion Stroescu.

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## 1. A SHORT BIOGRAPHY

*More information will be presented in the text accompanying the following images and, of course, in the presentations of my distinguished colleagues that will bring homage to the MAN that was Ion Stroescu and to his work.*

- He was born in Ploiesti, on the 13th of August, 1888.
- He attended the elementary school and the high school in Ploiesti.
- He graduated the Belle-Arte School and Central School of Gymnastics in Bucharest.
- Since 1912 he worked as a draftsman at the Romanian Railways (CFR), and shortly after became an associate professor at Pomarla in Moldova, then at the High school in Rm. Sarat, followed by the High school in Giurgiu and finally at the “Matei Basarab” High school in Bucharest. From 1921 to 1922 he worked with the Technical Aeronautical Directorate within the War Ministry, and was sent abroad for studies in some of the major European aeronautical centers.
- Between 1929 and 1937 he was a teaching assistant and a lecturer at the Polytechnic School of Bucharest headed by Professor Elie Carafoli.
- In 1937 he moved to the University of Bucharest within the Fluid Mechanics Laboratory of Prof. Victor Valcovici, that later, around 1939-1940, will become the Institute of Aerodynamics.
- In 1948 he moved to the Applied Mechanics Institute of the Academy and then to INCREST.
- He died in 1961, aged 73.

## 2.

The declared passion of his life was the experimental aerodynamics and especially the aerodynamic wind tunnels. The letter he published in the “DIMINEATA” newspaper of 30 August 1910 is a testimony of this fact:

### **A new Romanian aviator**

We receive the following,

Esteemed Gentlemen,

Apart from the 5 Romanian inventors: Mr. Vlaicu, Goliescu, Brumarescu, Mardarescu and Magnani, there is another who stayed unknown to the public up to now because he would have wanted this to happen until his debut. This person is myself, bringing to your attention the fact that after a serious 2 year study of the aviation matters, studies accompanied by experiments on scaled models, I came to design an airplane that is superior to Bleriot XI and Demoiselle (Santos-Dumont), exhibiting superior characteristics, among which the fact that it is meant to change the current, experimental state of aviation to a practical one. It weighs 360 kg fully equipped and with a complement of one pilot and one observer, can transport ammunition, does not require hangars, etc.

I patented the machine under the title “Airplane Romania” and lately I brought some substantial improvement and wanting to build it, I am determined to sacrifice all my funds and everything I own, with my unrelenting desire of serving my country in this way and contributing to the progress of the aviation.

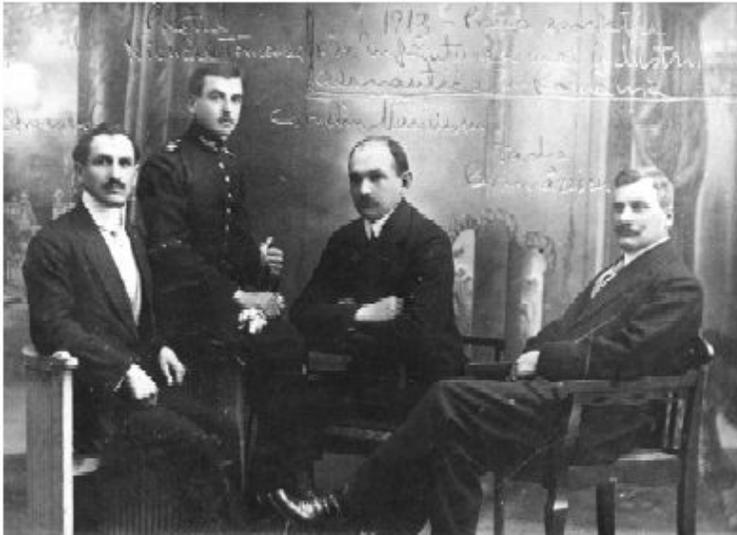
I therefore make an appeal to you, gentlemen, to support me when the honorable Council of Ministers will fund Romanian airplane construction. The necessary amount of money for the entire building process within the workshops of Mr. Cerkez in Chitila is only 3500 lei (the paper in which this announcement appeared was 5 bani per copy, or 1 ban was a hundredth part of 1 leu, a.n).

I do not doubt that, given your relentless dedication to this cause, you will find a solution for me. Formally I forwarded a petition to the honorable Ministry of War, attaching the plans completed with descriptions to be submitted to the scrutiny of a technical commission.

I also send the honorable Mr. Cotescu, col. Iliescu and the Prince V. Bibescu a copy of the memoir and plans.

With the deepest consideration,

J. Stroescu, 62, Cazarmei Street, loco.



Ion Stroescu; Nicolae Tânase; Corneliu Marinescu; Tache Brumărescu

Fig. 2- The group of enthusiasts who founded an association to promote the aeronautical constructions, in Bucharest, 1910: Ion Stroescu, Nicolae Tanase, Corneliu Marinescu and Tache Brumarescu

### 3.

*His passion for aerodynamics is best stated by a short excerpt from his book's preface:*

**I. Stroescu, New Perspectives in Airplane Aerodynamics - The problem of the “big speed spectrum spread” and of stationary flight. Original theoretical attempt\*), Lithographic print 1925, XXII + 177+ VII p. [NOUI PERSPECTIVE ÎN AERODINAMICA AVIONULUI - Problema “marelui ecart de viteze” și a zborului staționar. Încercare teoretică originală\*), Litografiat, 1925, XXII + 177 +VII p.]**

Apart from the specialties of my teaching career, that I certified and I profess to earn a living, the undersigned has been attracted to yet another branch of human intellectual activities, one of the most delicate branches of modern applied physics: the mysteries and laws of the aerodynamic phenomena applied to aeronautics.

I have passionately dedicated all my spare time to this beautiful and interesting science for more than fifteen years, and I don't exaggerate at all if I say that during this time, thousands of day and night hours were spent with the newest and most serious specialty foreign works and revues, that I was always among the first to procure, with great financial sacrifices considering my budget was my salary, works that I assembled in a very respectable personal library, that allowed me to teach myself and keep up with the latest developments in this scientific domain.

About my self-teaching of this new domain, the undersigned, apart from a certain competence, also has a series of original studies and projects that were once presented to the War Ministry and offered completely selfless, for free, to the benefit of the Army, as can be seen in the originals and memoirs in the War Ministry's Archives, ...

\*) The author and the book received the "Adamachi" prize of the Romanian Academy in 1926.

#### 4.

In 1920 he submitted a proposal to the War Ministry for the creation of an Experimental Aerotechnical Center, including a wind tunnel.

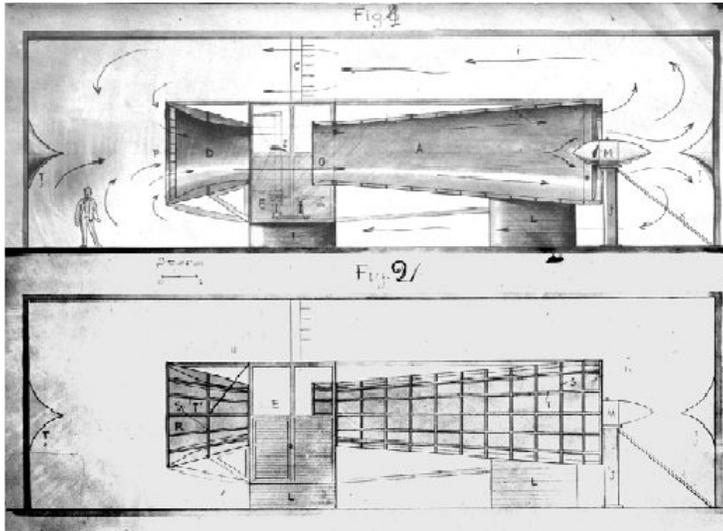


Fig. 3

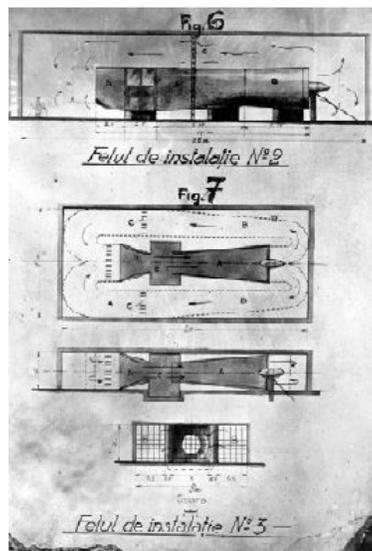


Fig.4

Fig. 3 and 4 – two drawings by Ion Stroescu meant to sustain his proposal of building an open-type wind tunnel.

**5.**

*Between 1926 and 1927 he designed and built at his expense an aerodynamic tunnel having a length of 13,10 m and a central section of 1,5 m for the experimental section, receiving models of up to 1 m span, at the “King Ferdinand” High School in Ramnicu Sarat.*



Fig. 5



Fig.6



Fig. 7

Fig. 5, 6 and 7- three images taken during the building of the wind tunnel in Ramnicu Sarat, that would be mounted within the High School's abandoned gym hall, only to be abusively demolished in his absence, following a decision of superior school authority.

## 6.

*In 1930, after obtaining a formal accord, Ion Stroescu demanded his employment at the Polytechnic School of Bucharest, at the newly founded aviation department. We reproduce the text of his written application he presented in this purpose, together with the resolution of the rector Nicolae Vasilescu Karpen (original documentation exists in the Archives of the "Politehnica" University in Bucharest):*

### **To The Ministry of Public Instruction and Cults**

The Polytechnic School,  
Bucharest  
№ 001143; 20 Feb.1930

A report will be made for him to be paid  
for a teaching assistant position,  
20 Feb. 930

Vasilescu Karpen

Mr. Rector,

Following your graceful intervention to the Honorable Minister of Public Instruction, the undersigned finds himself on a leave from the secondary teaching, so as I can design and build the Experimental aerodynamics laboratory at the Polytechnic School, as well as for the service of practical experiments within this lab. (I mean the experiments that are made for

the school and the aerodynamics course, but also those ordered by other institutions that will make appeal to the facilities of the lab, like civil and military aviation, the aeronautical schools of the War Ministry, the science faculty, the aeronautic industry etc.).

By this paper I want to further strengthen my verbal declaration, that: I shall consider as an important obligation to work as a subordinate to Mr. Carafoli, with all the love and scrupulousness, without sparing work hours or days, or holidays, if need arises. I also consider to be bound by honor to put in the service of this laboratory all my instruments and tools I already possess and whatever modest contraptions and improvements to these instruments my superiors, you and the Professor, will approve. As for the wind tunnel in Ramnicu Sarat I keep it at the Polytechnic School's disposal, of course in the shape of materials for other uses, as it was forcefully dismantled and deteriorated. To sum it up, I kindly ask you, Mr. Rector, please dispose the establishment of my situation within this school, regarding both my job title and the associated benefits. To help you decide, I allow myself to show you my current situation as a secondary teacher.

With deep respect,  
I. Stroescu,  
76, Isvor Street,

To the Rector of the Polytechnic School, Bucharest

*V e r s o :*

***Master of dexterities, assimilated to secondary teacher***

Titled with 4 grades at the Matei Basarab High School, Bucharest

Salary .....	16,300
Rent .....	960
Family allowance, three children.....	250
	17500

Being on a leave, I get 20% of that plus gradations = 8113 lei from the high school

18.II.930

I. Stroescu	17.510	
	8.113	
	-----	
	9.397	~ 9.800
	9.398	

*To be able to be transferred to the Polytechnic School, the solicitant needed the approval from "Matei Basarab" High school that was granted to him:*

No.0043 10 Ian 1931

To Mr. I. Stroescu, Master at the "Matei Basarab" High School in Bucharest

I am honored to inform you that the ministry of public instruction, the General Directorate for Secondary Instruction, (Dir.III) in the decision no.175789/929 Service A, approved unlimited leave starting with December the 15th, 1929, to cooperate with the Polytechnic school in the design and manufacturing of the aerodynamics laboratory.

The pay for the suppliant teacher at the chair you hold at the "Matei Basarab" High School will be paid for by the Polytechnic School.

Director, cryptic signature

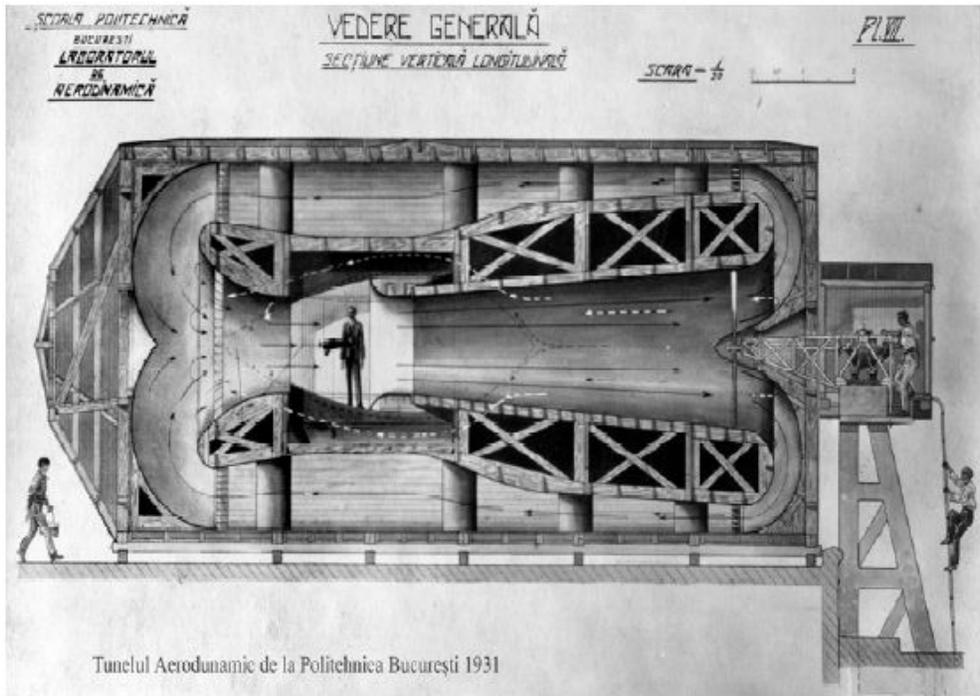


Fig. 8

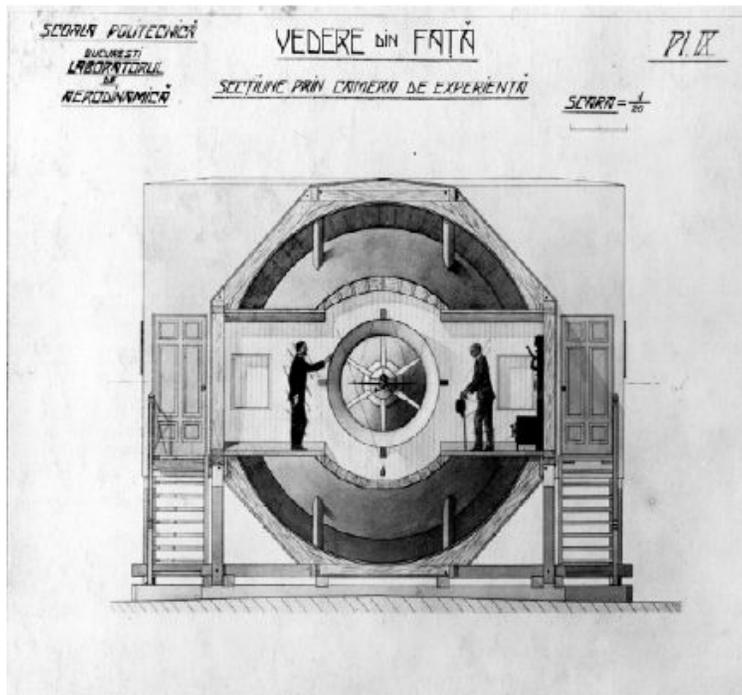


Fig.9

Fig 8 and 9 - two presentation drawings of the wind tunnel Ion Stroescu conceived and designed for the Polytechnic School, under Professor Elie Carafoli's supervision. A vertical longitudinal section and a test chamber section.



Fig. 10

Fig. 10 - a picture taken during the building of the tunnel, nearing completion. The building and fitting works were finished in the spring of 1931.

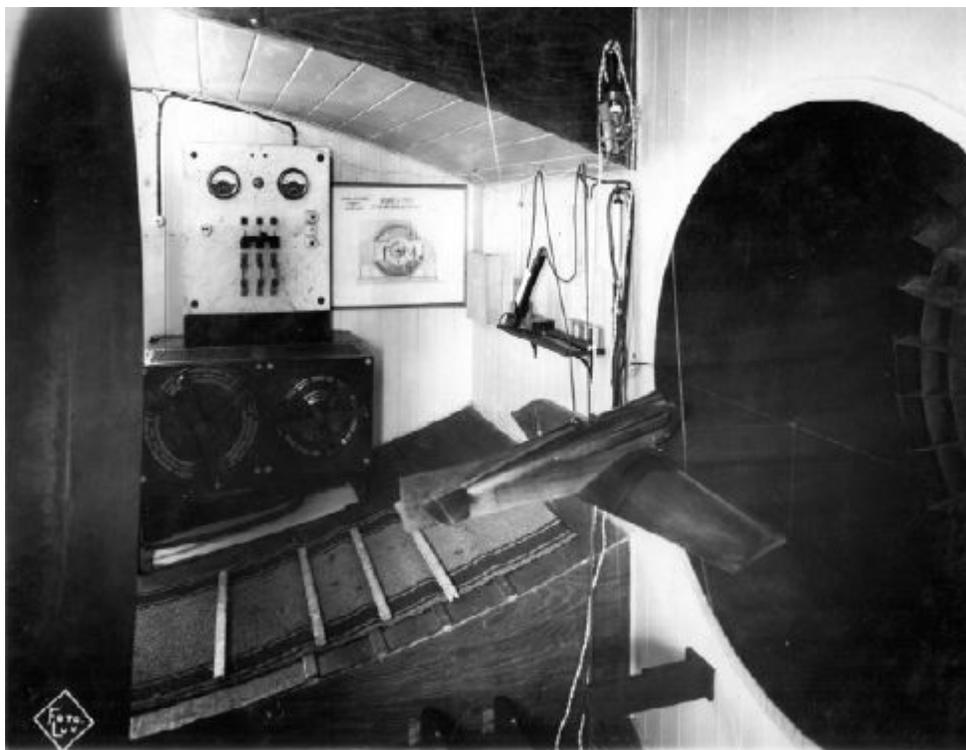


Fig. 11

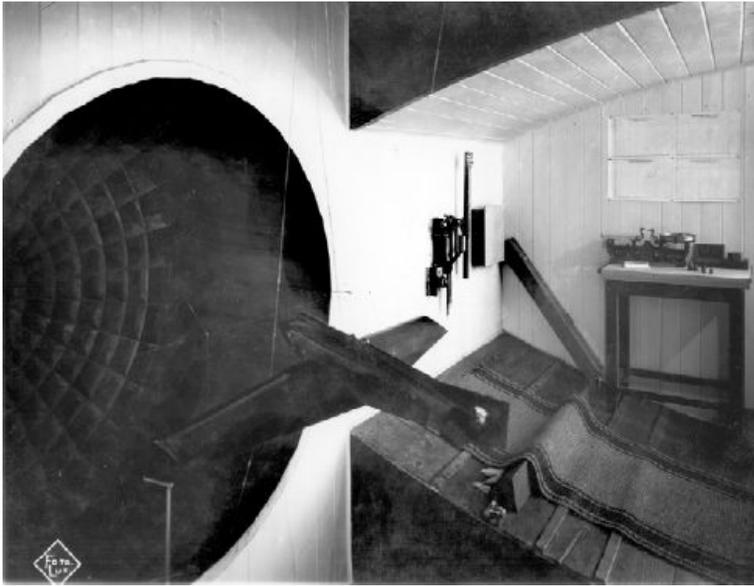


Fig. 12



Fig. 13

Fig. 11, 12 and 13 – Pictures from the experimental section of the tunnel: the first and the second show the electric control panel and a model of the IAR airplane tied to the wires of the aerodynamic strain gage of the tunnel –also designed and built by Ion Stroescu, and the third, another image from the structure around the balance, with a good portrait of Ion Stroescu with another assistant of the aviation chair (we suppose it is I. Carstoiu).

**7.**

*The aerodynamic tunnel at the Polytechnic School, situated at the “Polizu” location, was inaugurated on May the 7th of 1931, the “Golden Book” of the school bearing this inscription:*

Today 7th of May 1831

On the occasion of the anniversary of:

75 years of technical studies in Romania

50 years since the Reorganization of the National School for Bridges and Roads,

10 years of Polytechnic School

His Majesty the King graciously agreed to bestow His Name upon it, to name it:

**“The King Carol II Polytechnic School”**

HM the King together with HrH the Prince Nicolae and high state dignitaries, received the oath of the fourth promotion of engineering students under arms, and decorated the school’s flag.

Then he inaugurated: The wind tunnel, the electro-technical laboratory, the thermal engines laboratory and he visited the other laboratories at the school.

Signature Carol

Signature Nicolae

**8.**

*The tunnel still stands today, in 2011 celebrating 80 years of operation, with the first 8 being the most useful and fruitful period of the life Ion Stroescu dedicated to his passion. We can evoke it by quoting two documents that are kept in the University library archives:*

№ 015117      2. Dec. 1946

Mr. Rector,

The undersigned I. Stroescu, former teacher in the secondary cycle, now retired, I respectfully ask you to grant me the release of two copies of a proof certificate that states I worked as an associate professor at the Politehnica of Bucharest, as a teaching assistant in the Aerodynamics lab, from 15 of December 1929 until 12 of February 1937, after that being detached by the Ministry in the same quality to the Romanian Scientific Research Institute at the Science Faculty.

As this proof is required for my pension, it is necessary it states:

- 1) The time I served (continuously without any leaves)
- 2) That I had 10% deduction at every salary for the pension fund
- 3) The leaves I got (none)
- 4) Punitive measures taken against me (none)

As the undersigned was retired at the 1st of September 1945 and I have not yet received any pension, I respectfully ask you to release this certificate, in two copies, at your earliest convenience. I had made a previous petition in this matter that was registered with the nr. 10688/8 August 1945 but got no response so far.

I annex the stamps required for both the copies of this certificate.  
Please receive my deepest consideration, Mr. Rector,

I.Stroescu,  
retired teacher, 3, Cameliei Street, Bucharest

*He received the following response:*

8227/13th of December 1946

Following your request Nr. 15117 of December 2nd 1946, we certify that Ion Stroescu, appointed definitive professor at the "Matei Basarab" high school in Bucharest, was detached to the Aerodynamics Laboratory of the Politehnica University of Bucharest, where he functioned as a research assistant from December the 15th 1929 until 1st of March 1937.

During this time he did not take any leaves and he received no sanctions, and received pay as follows:

- from the 15th of December 1929 to 1st of January 1931, a salary of 9800 lei per month, before tax deductions
- from the 1st of January 1931 to the 1st of January 1932 a salary of 9850 lei per month, before tax deductions
- from the 1st of January 1932 to the 1st of April 1933, a salary of 6850 lei per month, before tax deduction
- from the 1st of April 1933 to the 1st of March 1937 a salary of 6150 lei per month, before taxation

From this salary a constant amount of 10% was held for the General Pension House .

The present certificate is proof for his pension dossier at the Faculty of Sciences in Bucharest

Signed,  
Indecipherable.

## 9.

*In 1938, Ion Stroescu was detached to the Faculty of Sciences at the University of Bucharest, within the Fluid Mechanics Laboratory created by Prof. Victor Valcovici that studied and got his doctoral degree in Germany, in 1913 under the coordination of Prof. Prandtl, the director of the Goettingen Aerodynamics Institute.*

In the lab at the University intense efforts are made to design, build and subsequently try two scaled models of aerodynamic tunnels, in the desire to build a new wind tunnel for the Aerodynamics Institute of Bucharest, in Tiganesti. Here too, Ion Stroescu presents a lot of ideas, has the required expertise and comes forward with a lot of practical solutions and a lot of patented ideas.

The experimental results obtained through hard work and exemplary coordination with Prof. Valcovici and, after 1941, with the freshly graduated mathematician Ioan Sabac from the University of Bucharest, bring an international recognition to the team Ion Stroescu was in, after their presentation at the Aerodynamic Research Academy in Berlin, in 1943. The appraisals come especially from Prof. Prandtl that remarked their merits after a visit he made to Bucharest in April-May 1941, but also from Prof. Betz and other German specialists.

## 10.

*In 1946, at the 6th congress of Applied Mechanics in Paris, Prof. Valcovici and Ion Stroescu presented their theoretical and experimental results obtained at the Aerodynamics Institute of Bucharest, results that would raise special interest from their French hosts, so that “Prof. Edmond Brun from Sorbonne requires permission to use the design for the wind tunnel in Bucharest for the requirements of Sorbonne labs” (apud Prof. V. Valcovici).*

*Following Prof. Brun’s request and with the approval of the Romanian government, Ion Stroescu works in France for 16 months to design and build a special aerodynamic wind tunnel ( scaled at 1/3 of full size) to test the plane wing freezing, in the Bellevue labs of ONERA.*

Prof. Valcovici characterized Ion Stroescu:

*“The time spent in the labs at Sorbonne gave Prof. Stroescu the opportunity to befriend all his French collaborators in the lab. Because he is always guided by his high moral characteristic I already mentioned: his Modesty; and to this, he adds a second, just as important: his Kindness”.*



Fig. 14



Fig.15

Fig. 14 and 15 - the wind tunnel at Bellevue, designed by Ion Stroescu - two views

## 11

*After his return in the country, Ion Stroescu will be appointed at the Applied Mechanics Institute of the Romanian Academy, where he will start a new work period, using the accumulated experience and knowledge to design, within a larger collective, the Subsonic wind tunnel from the Militari platform, a highly performing large installation, that still is in operation to this day.*

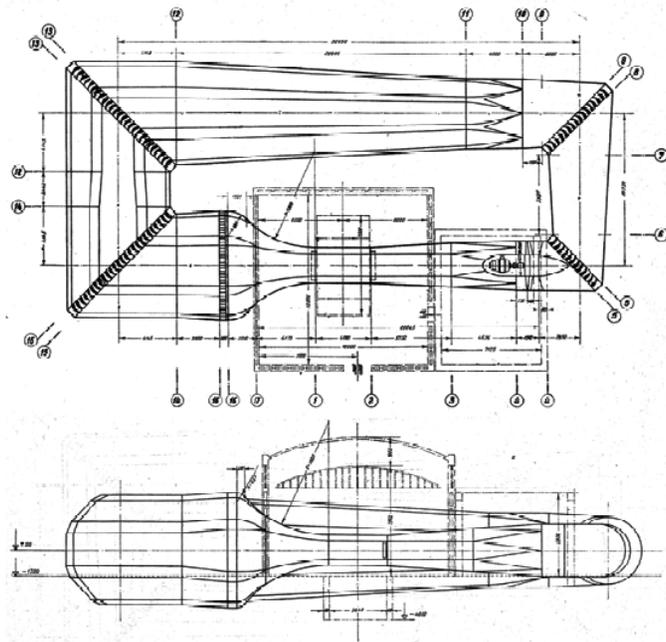


Fig. 16

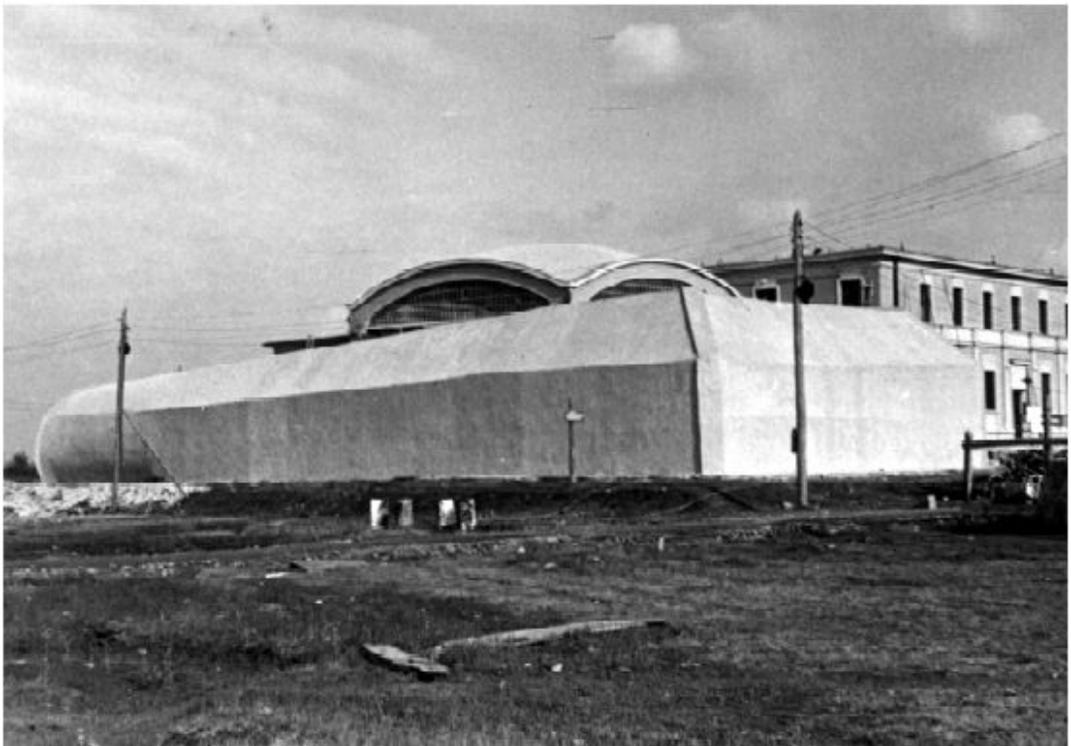


Fig. 17

Fig. 16 and 17 - the aerodynamic subsonic wind tunnel on the Militari platform. A schematic view with the main dimensions and a photo of a final stage of construction.

**12**

To conclude this short and incomplete presentation, I kindly ask you to allow me to recall an extraordinary fact:

*In 1960, with the occasion of the celebration of 50 years of activity in the field of aviation and 70 years of age, Ion Stroescu is celebrated and praised by speeches by three members of the Romanian Academy – Academicians: Elie Carafoli, Victor Valcovici, Dumitru Dumitrescu and the Prof. Nicolae Tipei.*

Especially significant are the few of words the Academician Dumitru Dumitrescu said at the Romanian Academy, about Ion Stroescu:

***“Without technical university studies, but characterized by a spectacular tenacity and through relentless work, he attained the maturity and the validation as the autocrat of Romanian aerodynamics”.***

No comments!

Thank you for your attention!

***Note: The photos in this paper were kindly provided by Mr. Dan Antoniu whom I would like to warmly thank.***