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The relationship between António Aniceto Ribeiro Monteiro and the *Junta de Educação Nacional* (JEN), a portuguese grant student in the city of Paris (from autumn 1931 to spring 1936)[1]

As relações entre António Aniceto Ribeiro Monteiro e a Junta de Educação Nacional ou um bolseiro português na cidade de Paris (do Outono de 1931 à Primavera de 1936)

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Abstract: Given the importance of the scientific activities of António Aniceto Ribeiro Monteiro, not only in Portugal but also in Brazil and Argentina, where he taught, it is important to study his five years of intense work at the University of Paris so as to better understand how that period of learning shaped his career and his future activities. The primary historical source for this study is the JEN archive that belongs to the present-day FCT. During the period of his five-year grant, António Monteiro kept an extensive correspondence with the two successive executive Secretaries of the JEN, in which he gave full information, of his scientific progress and financial needs, as well as the scientific atmosphere in Paris. In this paper, our main purpose is to rebuild, as far as possible, Monteiro's academic life in Paris from the autumn of 1931 to the spring of 1936.

Keywords: António Monteiro; Manuel Valadares; Luís Simões Raposo; Francisco Leite Pinto; Junta de Educação Nacional; Portuguese Mathematics; Grant owners in Paris.

António Aniceto Ribeiro Monteiro was one of the most influential Portuguese mathematicians of the 20th century, if not the single most influential. Born at the turn of that

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century, he enrolled in the Science Faculty of the University of Lisbon for the university year of 1925-26. He initially aimed at becoming a military engineer but then changed to Mathematical Science, which he would graduate from in 1929-30. He was the second graduate of Mathematical Science to be awarded a grant by the *Junta de Educação Nacional* (JEN)[3] to study abroad; he was the first to be awarded a PhD on mathematics in a foreign country[4] (in his case, Paris, France).

Always pursuing the double objective of researching and also organizing research in mathematics of whichever country he was staying in (from Europe to Latin America), his return to Portugal in 1936 marks an important turning-point in how mathematical research was conducted in Portuguese universities. It is to the pioneering spirit of this man that Portuguese mathematics owes so much: (a) the creation of a "mathematical seminar" as the principal forum for discussion and the creation of new research; (b) the creation, in Portugal, of a mathematics international scientific journal; (c) the creation of Mathematical Centers, where research was organized, which was responsible for sending a generation of young mathematicians abroad where they could further their knowledge and develop their research skills; (d) the creation of a Portuguese scientific magazine at an introductory level for teaching mathematics…

Aniceto Monteiro was a man of his time who always paid close attention to the social, economical and political reality that surrounded him. He never hesitated to follow his convictions and fight for his causes, even at his personal expense. Early on, he realized that the scientific world was set in a larger political stage and that in order to be heard he must create the appropriate organisms. It is perhaps in this field that he most stands-out as an innovator, with the creation of a Physics, Mathematics and Chemistry Nucleus, "a real stone in the pond"[5] in the Portuguese university environment and later on, with the creation of the *Junta de Investigação Matemática* (a private institution devoted to mathematical research)[6].

Precisely because of the importance of his work, not only in Portugal but also in countries such as Brazil and Argentina where he taught, it is important to study his five years of intense work at the University of Paris for a better understanding how that period of learning shaped his career and his future activities. During the period of his five-year grant, António Monteiro kept an extensive correspondence, stored to this day in three large files[7],

[3] This institution was created by law decree no. 16381 on the 16th of January 1929.

[4] The first was Francisco de Paula Leite Pinto, although in JEN reports he is listed as being awarded a grant to study Engineering and Astrophysics.

[5] (FITAS, 2004: 59)

[6] An entity, independent of state, created on the 4th of October 1943 by Aniceto Monteiro, Mira Fernandes e Ruy Luís Gomes (GAZETA, 17: 18) — we indicate the journal number and page.

[7] These files now belong to the Archives of the Fundação para a Ciência e Tecnologia (AFCT).

with the two Executive Secretaries of the JEN where he gave full and independent information of his progress as a student and scientist, of his financial needs, and the scientific atmosphere in Paris. In other words, based on the documentation it is possible to rebuild Monteiro's life as a grant student in the city of Paris from the autumn of 1931 to the spring of 1936, the year he was awarded his PhD.

1. Introduction

On the 11th of July 1931 the following application was submitted to the JEN in a sealed letter, as per the regulations at that time:

> «[…] António Aniceto Monteiro, a graduate of Mathematical Science of the Faculty of Science of the University of Lisbon, with a year's internship at the Liceu Normal de Lisboa, aged 24, married, […] desires, with the aim of preparing himself for teaching at higher levels, to attend for three years the post-graduate courses of Infinitesimal Analysis and Function Theory, lectured at the Science Faculty of the University of Paris, at the "France College", "School for Advanced Studies, mathematical Sciences' section", which are of direct interest for the specialization described in the attached report; (…)The aforementioned requests: a three-year grant (in the amount you decide is sufficient so that the applicant, together with his wife, may live modestly), the cost of university fees and enough money for travel and installation […] ».[8]

This application was sent with residence, birth (*publica forma*) and marriage certificates, the latter attesting to his marriage to Lídia Marina de Faria Torres. Also attached were a letter of recommendation of the Senior Professor of mathematics of the Lisbon Faculty of Sciences, Pedro José da Cunha and a letter in which the petitioner described the work he proposed to achieve during the period of his grant. We transcribed part of the letter written by Doctor Pedro José da Cunha where he puts forth arguments in favor of granting the petitioner a scholarship:

> "(…) The initiative of this former student of mine, Mr. António Aniceto Ribeiro Monteiro, deserves all my support and applause. My direct knowledge of him convinces me that he his capable of carrying-out successfully this double mission he proposes. He is a person who does possess scientific curiosity as well as research abilities and has the capability of not only comprehending the work of others but also, as is vital, of producing his own work (…) His first project, on the Weierstrass function, stemmed from a class of mine, on the year that Mr. Monteiro attended the syllabus of Mathematical Analysis. During this class I made my students aware that they did not understand all cases that Weierstrass had demonstrated that

[8] (AFCT: 649, 1). From this point on all references to the FCT Archive will be made as (AFCT: number of the process, number of the document)

> his function was, or not, capable of having a derivative. Mr. Monteiro had the curiosity of taking a case not yet considered and was able to demonstrate that, for at least an infinite number of points in the excluded interval, the celebrated function could not be differentiated (…) In another project, which Mr. Monteiro presents to the JEN, this candidate introduces a new notion, that of a varying function, uniformly limited, and demonstrates its consistency as well as extracting from it some important consequences. He has demonstrated a capacity for inventiveness and the ability of concluding his research with success."[9]

And from António Monteiro's research proposal, which was part of his grant request, the petitioner stated the following research guidelines:

> "(…) As a basis for a conscientious research, the following work plan is necessary: 1) complement base knowledge already acquired; 2) study the main theories of the specialization which have been recently created and developed; 3) full initiation in research projects.
> I should note that I do not consider these three phases as consecutive stages, intrinsically separate of each other; the opposite is true, all should be pursued simultaneously, the manner in which they are presented serves solely to indicate the order in which they are to be considered in their phase of greatest intensity. (…)The Faculty of Science of the Paris University is the School that presents the greatest amount of requirements that are necessary for the attainment of my goal because, besides allowing me to pursue my objectives, amongst others it employs the following professors: Émile Borel (one of the founders of function theory), Henri Lebesgue (one of the founders of function theory and a specialist in several branches of Analysis), Paul Montel (Professor of a syllabus on Function Theory and Transform Theory), Maurice Fréchet (one of the worlds greatest mathematicians in the area of General Analysis and who, in 1928, with the publication of his book «Les Espaces Abstraits», opened-up new horizons in the field of mathematics), Goursat (the celebrated professor of Differential and Integral Calculus), M. [Elie] Cartan and [Gaston] Julia (renowned professors and researchers in Infinitesimal Geometry and Advanced Geometry). I am of the conviction that under the tutelage of such an eminent body of professors, all of them notable researchers, my own research will be proficiently guided (…) In addition to this, my stay in Paris would also allow me to attend the courses at the «Collège de France» or those at the «Claude-Antoine Reccot» foundation even those at the «École Pratique des Hautes-Études, section des Sciences Mathématiques» all of which are of direct interest to the specialization I intend to pursue (…) Whilst in Paris, I also intend to investigate the possibility of organizing a Center of Mathematical Studies whose objectives, among others, would be to regain the tradition of mathematics in Portugal (…)"[10]

[9] (AFCT: 649, 1). In all quotes we maintain not only the original underlining but also terms or expressions in other languages that were used in the original texts.

[10] (AFCT: 649, 1). From this point onwards, the terms in square brackets […] that appear in quotes, unless otherwise indicated, are of our responsibility and serve to provide a more complete understanding of the text.

In no part of his grant proposal does Aniceto Monteiro commit himself to attaining a PhD. He proposes only to study all that which is new and modern and that had not yet reached the classes of Portuguese faculties, in addition to initiating himself as a researcher. He shows a clear intuition that an individual's natural ability alone would not be sufficient and that there would be a need for an organization that would be devoted to this specific type of work. This is why he underlines his last task: to learn how to create "a Center of Mathematical Studies". From what is known of the life of Aniceto Monteiro, it is interesting to note that these objectives that he sets out as a twenty-four year-old "aspiring mathematician" were maintained throughout his entire his life: to study, to have an updated knowledge of all new research, to always think of new problems (investigate) and to organize research.

On the 25th of July of 1931, António Monteiro was informed that his grant request had been approved and by October both he and his wife would already be in Paris. However, until he sailed on the "Paquebot Atlantique"[11] he was able to witness in Lisbon most of what Portuguese historians call the year of all revolts or the year of all crises, "the great and final shock to the dictatorship"[12].

The economical and social effects of the international financial crisis of 1929/31 would be felt strongly in Portugal, forcing the country to a sharp decrease in economical activities: unemployment leads to revolts under the banner of "For Work and Bread"; social unrest reaches the factories and the fields of southern Portugal, the Alentejo. "The month of April [of that year] begins with a revolution"[13]; starting with the "Madeira revolution" that then spreads to the Azores islands and to Guinea (western African Portuguese colony). In Spain a Republic is instated, an event that stimulates political portuguese forces against dictatorship to action. The strike of the student's of the University of Lisbon (which began on the 25th in the Faculty of Medicine), spreads to Oporto and Coimbra; in Oporto the repression of the student strike leads to dozens of injured and the death of one student, whose funeral, on the 30th of April, was a great demonstration against the dictatorship. However the Madeira revolution ends on the beginning of May and it would be necessary to wait until the 26th of August, the day when the capital city would awake to the sounds of the clarion call coming from the Headquarters of the 3rd Artillery, signaling the start of the revolution that would spread to the capital's remaining military headquarters but remain unanswered by the rest of the country. The revolt would be defeated by the end of that day. It was the swan's cry for military action against a dictatorship that would last for another 43 years.

[11] Aniceto Monteiro's first Parisian letter to JEN has this ship's letterhead. (AFCT: 649, 13).
[12] (ROSAS, 1994: 222)
[13] (FARIA, 2000: 173)

The neighboring country's Republic supported the revolt against the Dictatorship and the greater part of exiled Portuguese republicans would base themselves in Spanish territory. However, a group of important figures in Portuguese democracy, the "Parisian League" would mostly remain in that city until the amnesty would allow their return to Portugal. During his first year in the Sorbonne, Aniceto Monteiro would have the opportunity of being in contact with them…

2. Paris: a mapping of addresses, the other grant students, the epoch

Upon arriving in Paris, the first man António Monteiro seeks-out is Francisco de Paula Leite Pinto; he refers to that encounter in his first missive sent to the care of the first executive secretary of JEN, Luís Simões Raposo: "I have already spoken with Leite Pinto who has given me lots of advice"[14]. He then writes "Next month I should be able to move to a cheaper apartment"[15] and on the 31st of December he moves to "16, R. Louis-Blanc, Levallois-Perret, Seine"[16], precisely the same hotel where some of the exiled "Parisian League" were staying. Among these was fellow grant-student, António da Silveira who carried-out his scientific studies at the Collège de France under the tutelage of Edmond Bauer, as suggested by Langevin:

> «(…) Sérgio has changed address to the Levallois-Perret residence, and I have also moved there upon insistence by D. Luísa. Raul Proença, Filipe Mendes e Jacinto Simões, already lived at the same hotel. A short while after Aniceto Monteiro also moved there. Almost every day, after dinner, we would gather at the Proenças' apartment: Sérgio, Filipe Mendes and I – with our wives; at times Monteiro would join us. The conversations would frequently turn to the political situation in Portugal. On one particularly heated night, Proença and Sérgio had a violent argument. On the following day Proença came to my apartment to apologize for having behaved in such a way to Sérgio, in front of me – in his house».[17]

In these almost daily reunions with these men, António Monteiro must certainly have witnessed the beginnings of Raul Proença's crises of despair and loss of lucidity. At the same time he also had the opportunity of forming his own opinion on the characters of these republican activists that were part of the core opposition to the dictatorship. He would express these opinions in a letter to Simões Raposo.

Monteiro's stay in Paris, for the greater part of his first year, was spent in the hotel where the Portuguese exiled were also staying. The information he sent to the JEN during

[14] (AFCT: 649, 13)
[15] Ibid.
[16] (AFCT: 649, 19)
[17] (SILVEIRA, 1976:22)

his five-year stay in Paris, allows for a reconstruction of his addresses, (TABLE I), which were mainly located in the "Quartier Latin" around the Sorbonne…

When Monteiro arrived in Paris several grant-students already resided there. Of these, two are mentioned frequently in Monteiro's correspondence to JEN, namely, Leite Pinto and Manuel Valadares. The latter is mentioned more frequently and it can be easily discerned that between the two not only did there exist a friendship but also a certain amount of empathy.

TABLE I
(Monteiro's addresses in Paris)

1	*Boulevard Port-Royal*	*until the 30th December, 1931*
2	*Rue Louis-Blanc, Levallois-Perret*	*until November, 1932*
3	*Rue d'Ulm*	*until October, 1933*
4	*Rue de Quatrefages*	*until June, 1934*
5	*Boulevard Pasteur*	*until September, 1935*
6	*Rue de l'École de Médecine*	*until October, 1935*
7	*Rue de l'Estrapade*	*until 1936*

From the day of his arrival, Aniceto Monteiro shows a clear concern for the economic conditions in which his fellow grant-students lived. Four months after beginning his grant he sends a letter to JEN, along with his first trimester report, in which he does not refrain from writing:

> «(…) The Junta should make sure that they provide their grant students with at least good working conditions (…) I am (…) unable to purchase books. To date I have spent 980 francs in books. There are two books that I need most urgently. Appel et Goursat, Théorie des fonctions algébriques, 2 vol., 200fr and Picard, Traité d'Analyse, 3 vol., 240, that Professor Julia advised that I study immediately. I am unable to purchase them. When there isn't enough money to live on, one has no other option but to adapt. One must wash one's face with soap for washing clothes, laundry is done at home, only one course is eaten at each meal, hot baths are taken with the aid of a bucket, one says at home for 2 days whilst one's suit is cleaned, one freezes because there is no money for wool clothes, shoes are worn until water no longer stays out, etc. until the day comes when you can not take it anymore; until then one lives on! (…) When there is no money for books, there are some things that are left unstudied (…) This is an important problem. I truly cannot subsist with the small allowance I have been given (…) I ask you to see whether the Junta could at least buy me the books I have mentioned. (…)»[18]

[18] (AFCT: 649, 20)

This is one of the characteristics of the correspondence Monteiro keeps with JEN, to inform of the financial difficulties that he and his fellow grant-students were facing in Paris. In February 1934, a letter was sent to the Executive Secretary of the JEN revealing the difficulties felt by the grant students in Paris:

> «To the Executive Commission of the Junta de Educação Nacional. The grant-students of the Junta de Educação Nacional currently in Paris, there sent by this high organism of the Portuguese culture, do respectfully request that your attention be brought to the precarious situation in which they find themselves as they attempt to fulfill their research goals, in accordance to the moral and contractual obligations set to themselves and the Junta. (…)»[19]

Which ends

> «(…) but because there exists good faith in the promise and its fulfillment, here is exposed a matter which, without doubt, will result in an immediate action by the Junta (…) If such an action were not to be taken, the grant students would not be able to honor their commitment and the only solution open to them would be to return to their country, a disastrous outcome that would forever affect their material, intellectual and moral lives It is the prerogative of the Junta to indicate such a path in the case of their existing no other, or else attribute to them the easy and just measures which they request legitimately and honorably.[Signed] (…) »[20]

As this letter is filed under António Monteiro's name and given that his signature appears first, there is no doubt that this initiative was instigated by him. Initiatives of this type, as well as his attitude towards his work, gained the respect of his fellow students, to the point of António Silveira writing, forty years later:

> «(…) In 1936, due to my initiative, the Nucleus of Physics, Mathematics and Chemistry was created, made-up by former grant students of the JEN in Paris – the old warriors of heroic times. It was however necessary to await the return of António Monteiro!...»[21]

From the signatures in the petition letter and the references made in other correspondence to JEN, we can conclude that the group of Parisian fellow grant-students whom Aniceto Monteiro consorted with most are the names referenced in TABLE II

Manuel Valadares and Aurélio Marques da Silva of the Science Faculty of the University of Lisbon, António da Silveira and Arnaldo Peres de Carvalho of the *Instituto Superior Técnico* (Engeneering), and Manuel Zaluar Nunes of the *Instituto Superior de Agronomia* (Agronomy) were, together with Aniceto Monteiro, the great activists and instigators of the "Nucleus of Physics, Mathematics and Chemistry".

[19] (AFCT: 649, 66)
[20] Ibid.
[21] (Silveira, 1976: 23)

TABLE II
(Grant students in Paris with whom Monteiro consorted)

NAME	Grant period	School attended or degree attained
Branca Edmée Marques (1899–1986)	*1931-35*	*PhD (in Chemistry)*
Francisco de Paula Leite Pinto (1902–?)	*1929–34*	*"École de Ponts et Chaussés" (Engeneering)*
Manuel Valadares (1904–1982)	*1930–33*	*PhD (in Physics)*
António da Silveira (1904–1985)	*1929–32*	*"Collège de France" (in Physics)*
Arnaldo Peres de Carvalho (1904–1989)	*1931–34*	"École de Physique et de Chimie *Industrielles" (?)*
Aurélio Marques da Silva (1905–1965)	*1933–38*	*PhD (in Physics)*
Manuel Zaluar Nunes (1907–1967)	*1933–38*	*University of Paris (Mathematics)*
João Avellar Maia de Loureiro		
António Medeiros(?) Gouveia		

Aniceto Monteiro leaves Portugal in a time when, following the 26th of August of 1931, "the dictatorship would increase its political force and develop political, administrative and policing mechanisms capable of avoiding future uprisings and threats"[22]. However, in a letter to JEN dated on the 20th of December 1932, he confides in a cryptic but hopeful tone "that dreadful one is long in falling"[23]. This was a hope shared by the political movements in Paris, especially in the intellectual French sectors. No political comments on the vibrant political ambiance in Paris would have been expected in his correspondence with JEN. However, after around seven months after arriving in Paris, in May 1932, following the political elections that were held due to the assassination of the President of the French Republic, Aniceto Monteiro pens some political thoughts in his letter sent to the Junta's executive Secretary:

> «(…) Here, as you must know, the ambiance is of unrest. Death of Daumer, victory of the left-wing party in the elections. Tomorrow are the elections for the new President. A possible candidate is the mathematician Painlevé (…). Lebrun, whose election at this moment seems to be assured (…) I would vote for Painlevé because he is a mathematician and left wing! (…) Please excuse the brevity of this letter, but when I write I am always in a hurry. I have a lot to do and am further burdened with some German lessons (15 francs an hour) that are crucial to me (…)»[24]

[22] (FARINHA, 1998:200)
[23] (AFCT: 649, 44)
[24] (AFCT: 649, 26)

It is predictable that Monteiro, as well as the other grant students, would be informed of the anti-fascist and increasingly armed resistance that led to the formation of the Amsterdam-Pleyel committee, an organization founded in the summer of 1932 with important members such as Romain Rolland and Paul Langevin. The Portuguese grant-students must also have witnessed the 6th of February of 1934 in Paris – the extreme right-wing demonstrations demanding for the resignation of the Government, with a police confrontation that resulted in 17 dead and around 2000 injured. The political reaction to these events was the creation of the "Committee of Anti-fascist Intellectuals" where, among others, the names of Langevin, Jean Perrin, Irene Joliot-Curie and Jacques Hadamard stood-out[25]. And before his return, in the spring of 1936, already a PhD in mathematics by the Sorbonne, Monteiro would still witness the results of the legislative elections that, on the 3rd of May 1936, would elect the Popular Front. The government established by the "Front" would, for the first time, have an office for Scientific Research with a sub-secretary of state lead by the 1935 Chemistry Nobel Prize winner, Irène Joliot-Curie…

If on the political front in general the scene was "agitated", in the French scientific political front the scene was also of unrest, a situation surely felt by the Portuguese grant students. In 1928 the Henri Poincaré Institute had been established in the Science Faculty, funded by Americans and the banker Rostchild. Its first director was the mathematician E. Borel and it was the first French organization exclusively dedicated to research in mathematics and theoretical physics. In 1930, the physicist and Nobel prize winner, Jean Perrin leads an important political campaign that aimed at creating an institution that would be responsible for raising and providing funding for French scientific research. An organism that would allow for careers in research not necessarily connected with teaching positions at Universities and schools. Supported by his circle of scientific connections – Curie, Langevin, Borel — Perrin is able to gain the support of the winning party of the 1932 elections in the creation of a Superior Council, an entity that was responsible for the distribution of funds to the various groups and institutions. All the public discussions that led to showing the importance of scientific research, or of a rational attitude in the understanding of nature, would impact in a significant way on António Monteiro. It would be the government of the Popular Front that would generate the means for scientific research to create, in 1939, a structure responsible for the coordination of all scientific research carried-out in French laboratories, the renowned CNRS[26].

[25] (WINOCK, 2000: 255)

[26] The President of the French Republic, Albert Lebrun, signed the decree of its creation on the 19th of October 1939.

3. The "Junta de Educação Nacional": two Executive Secretaries.

All the correspondence that António Monteiro kept with the JEN throughout his life as a grant-student is addressed to the Executive Secretaries of that institution: first, with Luís Simões Raposo, between his departure to Paris and May 1934, the date of his demise; secondly, between July 1934 and his return, with Francisco Leite Pinto. In the interval between the death of the first and the nomination of the second, Celestino da Costa, the vice-president of JEN, would take-on the necessary contacts.

Of the correspondence with Luís Simões Raposo, it is only possible to access the student's letters; there are no copies of the letters that the JEN secretary would have sent to Monteiro in the archived files[27]. In these letters, Monteiro would address himself to Simões Raposo in a respectful manner with some amount of formality. Nevertheless, he would expose with frankness all his issues: throughout the correspondence the term of respect "*Sr. Doutor*" (Doctor) is used frequently as is the term "*V. Ex.ª*" (Sir). It is also possible to become aware of an affinity in their ideologies, as Monteiro is comfortable enough to write about his views on the political developments; this would not have been well received by a Executive Secretary who supported the dictatorship.

Between the two men there is a discernable age gap: Simões Raposo is ten years older than Aniceto Monteiro, who was certainly aware of the part the latter had played in the creation of the JEN project. Professor Celestino da Costa wrote the following in reference to the first Executive Secretary of the *Junta*,

> «(…) In 1924, Dr. Luís Simões Raposo, who at the time was my assistant and still a student of medicine and a member of the Direction of the Academic Federation, defended, at a conference held at the Science Faculty, a project for the creation of a student's residence hall that would be associated to an autonomous Institution that should follow the same principles of the one in Madrid. Dr. Simões Raposo's initiative lead to the creation of a private institution which was named the "Junta de Educação" (…)»[28]

This conference that Simões Raposo attended was held while he was a member of the Lisbon Academic Federation. He was also a member of its board, along with another student of the *Instituto Superior Técnico*, Duarte Pacheco. Two years later, Luís Simões Raposo[29] would be working with António Sérgio when the latter took on the job as minister for education for two months, during which he introduced a bill for the creation of an *Junta de Orientação de Estudos*; this was voted out in parliament due to political and financial

[27] These are probably part of the personal heritage of Aniceto Monteiro, currently owned by his heirs.
[28] (COSTA, 1934: 6)
[29] On the 26th of December 1923 a directive is published that nominates the assistant Professor of the Faculty of Medicine, Luís Robertes Simões Raposo as António Sérgio's cabinet chief.

difficulties. In this manner this doctor, a researcher in Histology, is connected to the initial project of the Junta as well as to the group of the magazine, *Seara Nova*. It is therefore understandable that, due to old "academic affiliations", the true creator of the JEN project in 1929, Duarte Pacheco, would invite Simões Raposo to hold a key position in this institution. It is very enlightening that the minister (Gustavo Cordeiro Ramos), in his speech to the newly appointed member of the Junta that ended with a quote from Mussolini, would be answered by Simões Raposo with a reminder of his bill in 1921 and the work done by Sérgio in the ministry of 1923[30]…

In the year of 1928, a few months before taking-on his position as the Executive Secretary of JEN, Luís Simões Raposo wrote in several issues of the magazine *Seara Nova* an intriguing article on the higher education in Portugal[31]. He compared it to the education in other European and American countries but never finished it because,

> "(…) I have suspended the publication as I am certain that I will personally be able to account for some measures as an ending for this campaign for the reform of universities and higher education (…) maintaining the hope of attaining the solution to a diversity of problems (…)"[32]

He thus deposited all his hope in the role he would play in the Junta de Educação Nacional. Simões Raposo had been an assistant professor in the Faculty of Medicine of Lisbon since 1925, having published, between 1922 and 1932, over four-dozen scientific papers[33]. Besides being an author for the *Seara Nova*, he was a proven gifted doctor and researcher, both in the classroom and in the laboratory, who was committed to the service of the Junta. These were reasons enough to command Aniceto Monteiro's respect for both his position and conduct. It is this respect that allows the grant student to write, after a year spent in Paris, a letter that constitutes a true "political venting" (though never forgetting to account for his studies) to a person who, although in a governmental job, was not part of the time's political "situation", and was, furthermore, a fellow scientist:

> «[…] I have been meaning to write to you for some days now but my duties have kept me from it. Classes, conferences and my work, if they won't take my health they will, at least, take my time. And time passes by at an amazing rate! This year I am attending some very interesting classes:

[30] (JUNTA, 1929: 24–26)

[31] The article was written with the intent of fighting the decision to close some of the Faculties in Portuguese Universities due to budget cuts. These had been implemented by the Dictator regime through the Decree (number 15365) of April 1928 and were justified by a "pretentious exaggeration of the number of bachelor-degree awardees and doctors" (RAPOSO, 1928: 416).

[32] (RAPOSO, 1928: 416)

[33] (RAPOSO, 1932: 19)

> 1) Fréchet — Theory of integral equations; 2) Borel — Calculus of probabilities; 3) Fréchet — Theory of chain events; 4) Denjoy — Calculation of the coefficients of trigonometric series. I am also attending Cartan's course on the theory of generalized spaces but I am beginning to think I have to drop it (…) I am increasingly convinced that our country is miserable under every aspect. The worst of the matter is that the problem will not be resolved solely by the half-dozen men that have fled it. All is yet to be done and that dreadful one is long in falling. And what if it does fall? Where are the men who would be capable of implementing advanced politics? Who would be capable of setting-up the intellectual, economical, industrial, political and moral resurgence of our people? No one believes in Afonso [Costa] despite his last minute posing as a socialist. Sérgio is well intentioned but very weak! […] I have the impression that none of these politicians are worth much. Unfortunately I must care for these political matters as the problems I worry about and want resolved depend on them […] You Sir are well aware of the nature of those that hold higher offices in politics here in France. They are not analphabets! Painlevé, Borel, Henriot, etc. Why does the same not happen in Portugal? Why are there no men? Why is it that in the place of minds we have boxes filled with the brains you might find in graves and in butchers? Why? Because education is only accessible to a tired, cretin and soft upper class. Here in France, every two generations, it is the people from the land (an infinite supply of genius and health) that provide the greatest deputation to the French elite (…) Free education, mandatory education! Here is the reason why we do not have mathematicians, why we do not have physicists and chemists, why we do not have anything! (…)Help, Help!!! This is the word that floats in the air and that no one wants to utter! (…) I am well aware that this is not the mission of the Junta de Educação Nacional. Please forgive me for having written down things I know you are well aware of but this allows me to… vent. It is always nice to be able to talk to someone that understands us. The fact that I met, here in Paris, a handful of politicians (whom nowadays I do not meet with and do not want to) was a disappointment but also a huge enlightening[34] (…)»[35]

Letters of this type were not frequent, although, due to the friendliness that existed between the two men, it can be seen that Aniceto Monteiro, even when providing an update on his research, and he did so regularly, allows himself to insert some amusing and slightly devaluing comments on certain well-known politicians. Here is another example of a letter, which accompanied a report on his scientific activities, sent in February 1933:

> «[…]I have been meaning to write to you for a while but there are times I do not know what to do with myself, things are so busy. The first semester is ending and I want to be sure of having revised completely all syllabuses. On par with this, shall we call it, official work, I have been occupying my time with that fatal habit of mine that the French call "recherches" (…)

[34] {Monteiro is writing about Portuguese politicians exiled in Paris}.
[35] (AFCT: 649, 44)

> All the above because of the following: at this time I should send to the junta a report about the first trimester of this year, which ends on the first of this month (…) As I must not waste a single minute these next three days, I have resolved to send the report only in 4 days time. It will therefore be late by that amount of time and I have resolved to write you this letter in order to, 1) sincerely apologize for that fact, 2) to justify myself and show you that I do not do so due to any irresponsibility on my part (…) Last year (…) I was able to save up, besides clothing and footwear, 1000 francs […] That amount was supposed to pay for my return trip to Portugal and I had resisted all the temptations that Paris offers, such as Josephine Baker, the new cinema Rex, a trip to Fontainebleau, etc., etc., [it was used to purchase] shirts and socks, etc. This was my salvation as it has been very cold (…) I intend to hold one or two conferences in Lisbon. I have still not chosen the subject. It shall be either on the results I have had from my research or on the ergodic Principle and some of its applications (kinetic theory of gasses, liquid mixing, etc.). Valadares is very worried that his grant might not be extended. Sir, if you could tell him it would be a great favor. When are you coming to Paris? I want to show you the Caveau des Oubliettes here in the Latin Quarter. Are you familiar with it? *C'est inoubliable*! (...)»[36]

The two above-transcribed letters reveal a certain animosity that Monteiro felt towards some elements of the *Seara Nova* Group. This tension can be interpreted as due to bad memories from the time spent at Louis-Blanc Street and which was mainly directed towards António Sérgio. On the other hand it could also indicate that both he and Valadares were already beginning their disenchantment with the ideals held by that magazine of the opposition, in the wake of what Rodrigues Miguéis had done two years before[37].

The trimester and annual reports that are sent without fail to JEN are plentiful – it is of note that he never complained of this task, although at times he did complain of a lacking of time. It can be seen that the reports are also a way of Monteiro performing a self-assessment on how his research and work he had set out were going. These reports were never a dry enumeration of chores; they were filled with pointed comments and frequently explained scientific details. Here is a detail from the second trimester report of 1931-32, which corresponds to the activities carried-out in the first six months after arriving in Paris:

> «In this manner, a candidate to a Certificate in Differential and Integral Calculus has as teachers Julia, Denjoy, Garnier e Bourion, who are, respectively, the symbols of vivacity and intuition, of rigor and abstraction, of clarity and attention to detail, none of which adjectives can be applied to the latter.»[38]

[36] (AFCT: 649, 46)
[37] Cf (FITAS, 2004: 44).
[38] (AFCT: 649, 27)

In the case of the communications to the Executive Secretary of JEN that replaces Luís Simões Raposo, Francisco de Paula Leite Pinto, the object of Aniceto Monteiro's correspondence during the years of 1934/35, 1935/36, it was possible to have access to the official letters sent in reply, as these are archived in the files. With Leite Pinto, Monteiro has a more informal relationship, frequently using the second person, a sign of informality. He again writes with great frankness about issues related to his situation as a grant student, but in this case never makes any comments on Portuguese politics or on any of the characters related to it. It is apparent that between both men there is a greater familiarity: Leite Pinto is five years older than Aniceto Monteiro; he too had attended the Sicence Faculty and had been a teacher at the same High school, where Aniceto had completed his internship. Leite Pinto had been a grant-student in Paris from 1929 to 1934 where he completed a degree in Civil Engeneering at the "École des Ponts et Chaussés"[39] and he was Aniceto's first contact upon arriving in Paris[40]. However Leite Pinto was a great supporter of Salazar, he was a devotee to the dictatorship[41], which meant that Monteiro had to take care in what he wrote and refrain from mentioning his own ideologies. In a letter to Rodrigues Lapa, Leite Pinto wrote: "In this nest and country of Eagles, home of Santa Comba (where, much to his chagrin, a superior man was born) it must bring you pleasure to know that the Minister of Education of the National Dictatorship, authorized yesterday funds in the amount of (…)"[42].

When he was informed of Leite Pinto's appointment as the new Secretary of JEN, Aniceto Monteiro wrote him a letter where he extends his congratulations and immediately moves-on to his personal issues as a grant-student:

> «(…) Your note has informed me that you have now begun your duties in your new capacity as Executive Secretary (for which I extend my congratulations) (…) I have some issues of the utmost urgency to bring to your attention:
> 1) In mid 1933 the Executive Commission of the Junta voted for a small funding of 2000$00 to be attributed for the acquisition of books for the Mathematical Institute. On that same month Dr. Simões Raposo wrote a note to me, which I attach, where he informed me of that fact and said that "maybe at the end of December I will be able to send you the first installment of 1000$00". I ask you to please return to me the note via registered mail or else keep it with you in Lisbon until my next return.

[39] "Has been nominated by the Sorbonne, a reader of Portuguese, teaching a course of great value on the nautical science of the Portuguese in the time of the discoveries." (JEN, 1932:110)
[40] (AFCT: 649, 13)
[41] Leite Pinto, who would survive the 25th of April 1974, held, during the dictatorship, some important positions within the government. Besides acting as executive secretary of the JEN, he was Minister for Education and Vice-president of the National Nuclear Energy Association.
[42] (MARQUES ET AL., 1997: 56)

> Zaluar and I have bought half a dozen books. A small expense which, if I am not mistaken, does not amount to 100 fr. On the other hand, this year I attended a seminar inaugurated (this very year) by Julia. This year's programme was "Théorie des groupes et des Algèbres". The specialists Dubreuil, Chevalley, Possel, Dieudonné, E. Cartan, Weil and Marty taught a group of lessons on the subject which were typed-up and sold to those seminar attendees that wished to acquire them. I decided to do so convinced that I was acquiring for the Mathematical Institute a bibliographic rarity (…)»[43]

In this letter, that arrived at JEN on the 11th of July 1934, there is a reference to the "Mathematical Institute" for which he had already started to acquire publications, revealing the persistence in carrying-out one of the objectives that he had set for himself, the "organization of a Center of Mathematical Studies". It was necessary for the Junta to start to accustom to a new organization dedicated to research in Mathematics.

It is with Leite Pinto that, at the end of 1935, he discusses the need for an extension of his grant until the end of the school year of 1935/35, which would allow him to write his dissertation and return to Portugal a PhD. The Executive Secretary of the Junta would support his request, sending a letter in mid November 1935, as a reply to the student's desperate plea:

> «(…) If I had not already been convinced that you possess a spark of genius, I would have been convinced from your letters alone. (…) Only a "brilliant" mind could pen a letter such as your last. You are so distanced from the reality of facts and current affairs that it even borders on offensive! (…) The resolution of your case will not be an easy one but you may rest assured that the Junta will do the impossible in order to extend your grant. It is up to you to do the impossible and calm your nerves and hurry Fréchet. (…) Do not return on the 15th of December and, without losing patience, await a letter from me with some explanations. It is with that letter that you must await your opportunity. (…) You do not comprehend these bureaucratic mysteries? Neither have I ever understood the non-Euclidian metrics in Hilbert spaces! (…)An admirer and sincere friend, comrade (…)»[44]

But, as in the case of his correspondence with Simões Raposo, António Monteiro's main concern with the JEN, despite the lessened formality in their correspondence, was to give an account of his work as a student at the Sorbonne, always demanding that the JEN satisfy what he considered to be the minimal working conditions. This is illustrated in his letter sent in June 1935:

> «(…) My wife has left for Lisbon on the 8th of this month because of my son. (…) As you know, the climate in Paris is bad for the younger ones. With the trip's expenses, this was the

[43] (AFCT: 1429, 6)
[44] (AFCT:1429, 50)

final result: (…) My wife arrived in Lisbon on the 12th with 80$00. I, after having rented a room for 280fr., had to ask for a further 300fr. In order to be able to eat until the end of the month (lunch and dinner are my only meals) I must not spend more than 6fr. per meal and am therefore beginning to weaken. My wife has no money. In my mothers house (where she is staying with my son) there has been no money for dessert for the past two or three years. You can therefore imagine the situation I am in. Can you please see if it is possible for me to be paid the money I am owed and entitled to for my return trip. In 1931 I was allocated 1000$00. That is the amount that was agreed upon in the contracts I signed. It is only natural that travelling expenses have risen in light of the current exchange rates. Whatever you may decide, I ask you to give my wife the money for the trip. I believe it is possible to do so if you send me a receipt such as the one written-out when the money is received locally. At times I have received my grant in Borges e Irmão checks, accompanied by such a receipt. (…)»[45]

4. Courses attended at Sorbonne and Collège de France

By mid-November 1931, one and a half months after his arrival in Paris, Monteiro wrote to the Secretary General of JEN informing him on the courses he was attending:

«(. . .) I am currently following the lessons of:
Julia — Lessons on Differential Geometry
Julia — Theory of analytic functions and the Theorem on the existence of partial differential equations
Denjoy — Differential calculus
Garnier — Complements of Algebra and Analysis
Bourion — Practical Analysis lessons
I have been attending Fréchet's course «About integral equations» but I feel I have to stop it due to an overlapping schedule. I have also attended four conferences:
M. Von Mises — Prof. at the University of Berlin; Three conferences on «Calculation of Probability: theory and applications»
Milikan —American; a conference on «Cosmic radiation».
I will start at the Collège de France on the 11 of December. During the first semester I need to study at least 8 hours per day. I also have authorization to work in the Library of the Institute H. Poincaré.
Yesterday I studied next to Hadamard (. . .) The scientific atmosphere here is fantastic. Ours is poor and pitiful in comparison»[46].

In the same letter Monteiro mentions that Fréchet advised him «to enrol in the Sorbonne's courses on Differential and Integral Calculus in order to obtain base

[45] (AFCT:1429, 24)
[46] (AFCT:649, 14)

knowledge»[47] and to attend «the courses at the Collège de France and the conferences on the Seminar in Mathematics (. . .). Usually new results and important problems to solve are presented at these conferences and courses»[48]. The three monthly and annual reports that Monteiro produced allow us to reconstruct, as faithfully as the available information permits, a calendar of Aniceto Monteiro's activities at the Sorbonne and Collège de France.

In his first quarterly report, Monteiro describes the functioning of the institutions, in particular that of the Henri Poincaré Institute, and the working conditions.

> «(. . .)I find in Paris all the elements I need for a successful post-graduation. However, two circumstances have prevented me from carrying out my work under normal conditions:
> 1) the deficient preparation I received in Portugal
> 2) the insufficient funds I have available for purchasing books.
> I have found the latter extremely inconvenient as it forces me to spend long and precious hours in the library copying from books (. . .)»[49]

He kept to the end, under the title "Observations", some considerations on the teaching of mathematics in Portugal:

> «(. . .) The teaching of Mathematics in Portugal is organized in such a way that the characteristics of the education of a Mathematical Sciences graduate are as follows:
> 1) Ignorance of a vast amount of base knowledge
> 2) Encyclopaedia type education resulting in
> 3) Superficial understanding of all studied subjects
> 4) Lack of critical spirit
> 5) Lack of initiation to methods of research resulting in
> 6) No interest for scientific research
> These statements are extremely serious and nobody can prove otherwise (. . .)»[50]

Although in most cases he is very critical of University education in Portugal, mainly of «encyclopaedic learning» and lack of a critical attitude, he also does justice to the fundamental knowledge gained in his undergraduate years. Indeed, when mentioning Denjoy's course «Sur les nombres dérivées des fonctions» he adds:

> «It is basically a specialized course with a very low attendance. Although up to now I have only had five lectures I am very interested in the course. I must say that the only reason why I am

[47] Ibid.
[48] Ibid.
[49] (AFCT: 649, 20)
[50] Ibid.

> able to follow the lectures is the solid grounding on «set theory» that I received at the Faculty of Sciences in Lisbon[51].

Pedro José da Cunha was the professor in charge of teaching that subject in the introduction to his syllabus on Infinitesimal Calculus[52].

It is possible to determine from the periodically reports he sent, which courses António Monteiro attended in Paris. The meaning of "attending" is, in his case, broader than a mere physical presence; it involves in depth study. Apart from some details, all the information supplied in letters and reports are shown in Table III[53]. Monteiro included in his reports comments about the courses he attended, particularly about their relevance to other disciplines. Indeed, his report of the second quarter of academic year 1934-35 contains a full typed page with comments about Gaston Julia's course on «*La Théorie des formes quadratiques finies ou infinies*»; he finishes the report by stating «Julia's courses appeal to two categories of academics: the ones that are interested in studying Modern Mechanics and those who, without that aim in mind, are interested in the mathematical problems it poses; I belong to the latter category»[54]. The reference to modern mechanics is a clear allusion to Quantum Mechanics a discipline that, at the time, captured the attention of the vast majority of theoretical physicists and of mathematical physicists. A few pages further the report reads «it is not possible to improve the level of education of Physics in Portugal without a sound mathematical knowledge, because the Study of Modern Physics (...) requires an increasingly wider knowledge of pure analysis»[55]. Monteiro frequently draws attention to the problems of Modern Physics, its importance and the need to deepen the understanding of mathematics; Physics in general is the focus of his attention; in the letter attached to the first quarterly report (pertaining to the first three months of stay in Paris) he writes,

> «(. . .) Generations of poor devils have been massacred with a pompous and unfit education and have left school ill prepared. What a waste of so much energy! What will be the preparation of physics and chemistry graduates? When will it be possible to create a discipline of Physical Theories in Portugal? (...) That's the devil! Modern Physics is not for babies or for idiots. There are plenty of idiotic, pretentious and ignorant buffoons in our country. They were not put through a sieve in high school or in University. Furthermore, they lack a basic

51 (AFCT: 649, 27)

52 «Once I introduced the Set Theory in my courses, the teaching practice suggested reflections that I later decided to publish (. . .)» (CUNHA, 1936: 95).

53 The titles are as per the reports of António Aniceto Monteiro.

54 (AFCT:1429, 22)

55 Ibid.

mathematical education, let alone an advanced one. How many people in Portugal are capable of studying Quantum Mechanics, Wave Mechanic, Relativity, etc, (. . .)»[56].

In that same report he points out, when describing Henri Poincaré Institute, that it frequently hosts «conferences usually by foreign scientists dealing exclusively with matters of Mathematical Physics, Probability Theory and Physical Theories».

To António Aniceto Monteiro the courses at the Sorbonne and the Collège de France are the means to complete his training, yet his main objective was to initiate his research projects. In compliance with this objective he keeps, from his very first report, those responsible for JEN informed about his progress in research work in mathematics, his mentor was Professor Maurice Fréchet.

Table III

(Summary of information taken from the reports and courses attended in Paris by A. Monteiro)

1931–32	
Faculty of Sciences	
Théorie des fonctions analytiques et les théorèmes de l'existence sur les équations différentielles	**G. Julia**
Applications géométriques de l'Analyse	**G. Julia**
Cours de Calcul Différentiel et Intégral	**A. Denjoy**
Compléments d'Algèbre et d'Analyse	**Garnier**
Compléments sur la théorie des équations différentielles	**Garnier**
Quelques questions sue les équations intégrales	**E. Goursat**
Travaux pratiques d'Analyse	**Bourion**
Collège de France	
Seminar on Mathematics	**J. Hadamard**
1932–33	
Faculty of Sciences	
Integral Equations Theory	**M. Fréchet**
Chain Events Theory	**M. Fréchet**
Asymptotic Behaviour of Nuclei – Fredholm	**M. Fréchet**
Theory of Hypergeometric series with one or more variable	**E. Goursat**
Harmonic functions	**P. Montel**
Iteration of rational functions	**G. Julia**
Collège de France	
Seminar on Mathematics	**J. Hadamard**
1933–34	
Faculty of Sciences	
Analyse Sytus Plane	**A. Denjoy**
Effet, sur le nombre de dimensions d'une transformation ponctuelle univoque ou biunivoque, continue ou bicontinue	**M. Fréchet**
Séries trignometriques, équations différentielles et aux dérivées partielles, calcul des variations	**A. Denjoy**
Travaux pratiques d'Analyse	**Bourion**
Seminar (Inst. H. Poincaré) «La Théorie des groupes et les Algèbres»	**G. Julia**
Introduction to the study of Modern Logic with Destouches, Kurepa, Loev e Petiau (researchers of Inst. H. Poincaré)	
Collège de France	

[56] (AFCT: 649, 20)

Seminar on Mathematics	**J. Hadamard**
1933–34	
Faculty of Sciences	
La Théorie des formes quadratiques finies ou infinies	**G. Julia**
La Topologie combinatoire	**M. Fréchet**
Asymptotic Behaviour of Nuclei – Fredholm	**M. Fréchet**
Theory of Hypergeometric series with one or more variable	**E. Goursat**
Seminário (Inst. H. Poincaré) «Espaço de Hilbert»):	
•Généralization de von Neumann (Chevalley)	
•Mesure de Haar (A. Weil)	**G. Julia**
•Représentation des groupes de Haar (Delsarte)	
•Les travaux de Carleman sur les équations intégrales singulières à noyaux symétriques (Leray)	
•Applications des fonctions presque-périodiques (A.Weil)	
Collège de France	
Seminar on Mathematics	**J.Hadamard**
La théorie des surfaces appliquables sur le plan	**H.Lebesgue**
Les équations fonctionelles	**J. Leray**

To António Aniceto Monteiro the courses at the Sorbonne and the Collège de France are the means to complete his training, yet his main objective was to initiate his research projects. In compliance with this objective he keeps, from his very first report, those responsible for JEN informed about his progress in research work in mathematics, his mentor was Professor Maurice Fréchet.

5. Research and the guardian figure of Fréchet

The report that António Monteiro submits to justify his application for a grant in Paris is very clear on the objectives pursued, but rather sparing on the details that support these goals: for instance, he proposes a «full initiation into research» but adds nothing about who would supervise him. The first letter addressed to JEN sheds some light on the issue,

> «[…]In my first letter to you I promised to keep you informed on my situation. As I had brought with me a letter for Prof Maurice Fréchet, I used the opportunity to ask for his advice on how to direct my studies at the Sorbonne. He advised me as follows:
> 1. There is no point in graduating in Mathematics, as there is equivalence between the degree awarded by the Faculty of Sciences in Lisbon and the degree awarded by Sorbonne. I do not know if you recall us talking about it and that we reached the same conclusion;
> 2. Once I plan to pursue research in Mathematics, it will be to my advantage to follow the courses on Differential and Integral Calculus at the Sorbonne in order to obtain a good grounding;
> 3. Regarding research work, he advised me to:
> A) Follow the courses that may interest me at the Collège de France and the conferences of the Seminar on Mathematics (they start on the 11 December). New results are usually presented during the courses and conferences and important topics to be addressed are pointed out.

> B) Anticipate the difficulties concerning research work and to keep my spirits up, because this work will provide for a good mathematical grounding.
> 4. Should I be so fortunate as to obtain important results, **then** I should think about doing a PhD. However, as I cannot see into the future, he advised me to enrol in the higher studies on mathematics, which also requires the preparation of a thesis, although of a far lesser importance than a Ph D. thesis. He stressed that I can achieve a lot during the three years I intend to spend here and this is the best way to plan my work (. . .)»[57]

In other words, Monteiro goes to Paris with a letter of recommendation for Maurice Fréchet whose contents are unknown. However, judging by the effects the letter produced — the French mathematician is an influential and important counsellor — it must have been determinant for the career of the young student financed by JEN. The letter for Fréchet probably dealt with the nature of Monteiro's work, the objectives of the grant and used a persuasive and objective tone; the gist of the letter was probably along the lines of the recommendation that Pedro José da Cunha had sent to JEN. Since the Professor was up to date with the work produced in Paris and the international connection of Portuguese scientists was made mainly through France, it is likely that he was the author of the letter addressed to the French mathematician, which Monteiro delivered personally. The reports sent by Aniceto Monteiro to JEN, lead to the understanding that in their first meeting Maurice Fréchet became the supervisor of Monteiro's research work.

In a letter mentioned above, dated February 1933, António Aniceto Monteiro summarizes his first scientific research

> «(. . .) [about the research] I have accomplished the following:
> 1) I have completed the work I sent to JEN last July
> 2) I achieved to express the characteristic function of the sum of two kernels of a Fredholm equation in terms of the characteristic functions of each of the kernels and their respective minors. I showed this work to Prof. Fréchet who found it to be correct, but he was not able to tell me if the result was known. Therefore, until further orders it is shelved!
> 3) I then went on to express the resolvent of the sum of two permutable kernels in terms of the resolvents of each kernel. I have mentioned this result to Fréchet but I have not yet had time to write it all down in order to show him. I should be able to do it soon.
> 4) On the study of discontinuous Markoff chains, I have demonstrated that the most general case studied so far (Romanovsky), that considers a chain in which the probability of occurrence of a certain event depends on the result of the previous tests, can in turn be regarded as a very particular case of more complex chains. These more complex chains do not require new demonstrations because, as I have shown, the demonstrations for the simpler

[57] (AFCT: 649, 14)

> chains can in general be applied to the more complex ones. I have submitted these results to Fréchet and I await his comments.
> 5) About a week ago I discovered the origin of the structure of the principal nuclei in a Fredholm integral equation. I am currently working on this topic, which is the most interesting result I have obtained so far. I handed Fréchet part of this work yesterday, but I still need to refine the demonstrations for the most complex cases. I am thrilled with this work because it is elegant and fun. Please do not think that I am joking, mathematics can be good fun! (. . .)»[58]

At the end of that academic year, his second one in Paris, Monteiro's annual report includes the first hand written report by Maurice Fréchet in letterhead paper of Henri Poicaré Institute, which is transcribed in full:

> «Report on the work of Mr. Monteiro
> During de 1931-32 school year, Mr. Monteiro has assiduously followed several courses in mathematics of high level which he has benefited greatly. He also tried his way in regard to research. During the 1932-33 school year, Mr. Monteiro has continued to follow several courses successfully and took up my advice on the study of several problems. He expressed some interesting ideas on several of these topics, a way of proving that he is able of originality. An extension of his stay will be useful to get used to quite modern rigorous to develop the different memories he gave me and especially for the theory of integral equations and those of probabilities. M. Frechet/ Professor at the Faculty of Sciences in Paris»[59].

In the 1933-34 report Aniceto Monteiro provides the following information about his scientific production (published):«Sur les noyaux additifs dans la théorie des équations intégrales de Fredholm», published in «Comptes Rendus de l'Academie des Sciences de Paris t. 198, p. 1737, séance du 14 Mai 1934» in which I summarize some of the results obtained between June and December 1933 when studying the Fredholm integral equation»[60]; (to be published) «Sur une classe d'equations integro-fonctionelles linéaires», «Sur la méthode de Carleman dans l'étude de la résolvante d'un noyau de Fredholm», «Sur les noyaux périodiques à la longue», «Sur les matrices additives à une matrice donnée». He further informs: «I gave two conferences in the Faculty of Sciences in Lisbon, the first one in July 1933 «Fredholm integral equations and the chain events theory». The second one in October of the same year about *the additivity of theFredholm kernels*. Halfway through his studies in France Monteiro showed the results of his research to the mathematicians in Lisbon. . .

The academic year of 1934-35 is crucial for Monteiro's scientific research. He presents a new communication to the Paris Academy that is accepted for publication — «Sur une classe de noyaux de Fredholm développables en série de noyaux principaux», Comptes

[58] (AFCT: 649, 46)
[59] (AFCT: 649, 58)
[60] (AFCT: 649, 80)

Rendues de l'Academie des Sciences de Paris, T. 200, 1er sem, 1935 (p. 2413)[61] —and makes two conferences:

> «(. . .) in April at the Mathematical Society of France in Paris, by invitation of its president Maurice Fréchet, professor at the Sorbonne, about his work on the additivity of Fredholm kernels, and another one at the same location by his own initiative on regular kernels. During the course of these conferences he presented his results that were later presented to the Academy of Sciences in Paris[62]».

In other words, there was enough original work for a PhD thesis, which Maurice Fréchet acknowledged in his end of the academic year report. After a detailed analysis of António Monteiro's work the French mathematician concludes:

> «(. . .) It would be both natural and legitimate to give a consecration to all of this work by presenting a PhD dissertation. And I am willing to give a favorable opinion when the request is made to me by the Dean of the Faculty of Sciences in Paris. I very strongly expressed the hope that the resources are given to Mr. Monteiro to proceed with the drafting of the systematic set of results, while pursuing - to put some variety in this job a little off-putting - his latest research in progress. I add that Mr. Monteiro writes very clearly and at a lecture he did at my request, the *Société Mathématiques de France*, I was struck by its clarity of his statement. When he returns to Portugal, that country shall be in it together with a distinguished mathematician in addition. Her friendly personality will leave here a lot of regrets. Maurice Fréchet»[63]

At the end of his fourth year in Paris, and faced with the results achieved in the previous three years, Monteiro's supervisor is ready to give his favourable opinion regarding Monteiro's admission to a PhD thesis at the University of Paris. Faced with Fréchet's recommendation and with "land in sight" António Monteiro's problem is to get JEN to extend his grant for a further year. Without it "land in sight" would be no more than a mirage. . .

6. The Ph.D. and the extension of the grant

Together with Fréchet's above-mentioned report António Monteiro sends, on the 25th of June 1935, a long letter to the President of JEN asking for an extension of his grant. The extension is not meant to support his post-graduation work; there is instead a clear purpose of writing and delivering a doctoral dissertation:

[61] (AFCT: 1429, 62)
[62] Ibid
[63] (AFCT : 1429, 62)

> «(. . .) Indeed, the majority of the results I have obtained thus far have not yet been written down in a systematic fashion, because my primary concern was to fulfil the objective of my post-graduation course. This objective was precisely to acquire a good technique and to train my mind (...)Therefore I have always pushed aside the idea of indulging in the publication and subsequent contemplation of the results of my work. Although the publication of my results would certainly entail a rigorous and effective demonstration of the accomplishments of my post-graduation work, it is also certain that the time used in that task of lesser importance would mean a slowing down in my work(...) Therefore, my reports just mentioned the research work done with no particular details.(...)The organization that you preside has trusted me and although I cannot say I have been entirely worthy of that trust, I can at least say, based upon Prof Maurice Fréchet's attached report on my work, that it has born fruits (. . .). Indeed, during the last year of my post-graduation I obtained some new results, which together with my previous ones, enables me to stand as a candidate to the degree of Doctor in Mathematical Sciences from the University of Paris.(...)I must confess that I did not expect to achieve it this year.(...)It is indeed the highest reward for my efforts that I could hope to obtain. Therefore, I believe that the course I chose for my academic activity can lead a student to obtain positive results; I believe this activity is certainly better than cultivating frivolity, which I despise.(...) If I can at all show my appreciation for the trust that JEN has shown in me then Mr. President, please accept the result of my efforts as such.(...) In view of Prof. M. Fréchet's favourable opinion I believe that the objective of obtaining the degree of Doctor in Mathematical Sciences from the University of Paris can be regarded as a natural aspiration on my part.. I also believe that he would endorse my efforts officially and would corroborate the opinion that JEN has formed about me, which I believe is the reason why JEN has paid for my grant for the past 44 months. Therefore, Mr. President, I respectfully request that my grant be extended in order to finance my PhD thesis in Paris (. . .). Furthermore, my stay in Paris would allow for a faster pace of my work because Prof Fréchet has to follow, as a "rapporteur", the writing of my thesis. Only here can I find the material needed for my second thesis and only here do I have the guarantee of counting on a specialist to supervise and guide my work.(...) Therefore, I think it is essential to extend my grant in Paris for a further year should you agree that I ought to write a PhD thesis (. . .)»[64]

After this request, JEN asked Pedro José da Cunha an opinion about the extension of the grant whose answer is unequivocal: the grant should be extended! Note the quick reply from the professor of the Faculty of Sciences of Lisbon: the request for his opinion is dated 4th of July and he replies on the 8th of July. Based upon this opinion JEN´s General Secretary makes known his decision: «I recommend that JEN extends Mr. Monteiro's grant

[64] (AFCT:1429, 30)

until the end of the current year»[65]. The notification of JEN's decision is sent to the applicant on the 26 July and published in "*Diário do Governo*" on the 13 August.

António Monteiro receives the information and does not contest it; on the 15 September 1935 he writes to JEN informing that he is in Paris[66]. He was working hard writing his thesis and must have tried to inform Fréchet (away since July, see below) on the conditions he had been given: to finish his Ph.D. until the end of that civil year. On the 24th of October he wrote to Leite Pinto:

> «(. . .) Fréchet went abroad in mid July. He started his holydays in Austria. He will not be back in Paris until the end of November beginning of December. Only then will he be able to start reading my thesis, which I expect will be nearly ready by then. As you know he has to submit a report before I can obtain the «permis d'imprimeur». However, he can only write the report after we have reached an agreement as to the contents of the thesis. Then the printing process can start (. . .). It all depends on how long Fréchet will take to review my thesis, which will depend on how busy he is at the time. We must also consider the time it will take me to make the changes (. . .) the thesis will have to be typed before the printing process can start (. . .) i.e. probable date for sending the thesis to the press, end of January (. . .) I will probably be unable to defend my thesis before May or June (. . .) Hence my request for an extension of the grant for a period of one year. If the grant cannot be extended and I do not finish my thesis until December, my presence here is useless and it would be a waste of money (. . .)»[67].

The letter goes on with several details about the printing of the thesis[68] and on the 9th of November he sent another long letter to Leite Pinto, insisting on his previous arguments but with a more desperate tone,

> «(. . .) I am very concerned that you have not yet replied to my letter of a fortnight ago (. . .) I asked João Maia to deliver this letter to you personally so I can rest a bit easier, because the situation is very serious and it affects my life. Maia leaves tomorrow to Lisbon.
> I find it extraordinary that if Junta foresees any difficulty in extending my grant it never warned me.
> What is even more extraordinary is the fact that when I asked for an extension in order to obtain a Ph.D. they approved the extension only until December. Either the Junta thought I

[65] (AFCT: 1429, 35)
[66] (AFCT: 1429, 42/2)
[67] (AFCT: 1429, 47)
[68] In that letter, he wrote «At that time Valadares talked to me about the creation of a mathematics scientific journal». Monteiro suggested to Leite Pinto the possibility of editing in Portugal, with the sponsorship of JEN, an international mathematics journal (the names *Acta Matemática Portuguesa* or *Lusitânia Matemática are suggested)* that would eventually publish his thesis because «I will try above all to prevent my thesis from being buried in the archives of the University of Lisbon»; he mentions that further to the contacts he has in France, Mira Fernandes and Ruy Luís Gomes could collaborate in the journal. . .

should obtain a Ph.D. and then would extend the grant until the end of the degree, or it thought that I should not obtain a Ph.D. and then refuse the extension (. . .)» [69].

Leite Pinto replies with the above mentioned letter[70] and finally on the 4th of December 1935 the chief secretary of JEN writes:

«(. . .) It is my duty to inform you that the Executive Board, at its last meeting decided to grant you an extension of the grant for a further five months. Therefore, your post-graduation in France will be extended until the 31 May 1936, and this date cannot be extended under any circumstances.
Mr Secretary General departed to Madrid today on urgent public matters, but he will be writing to you on his return on the 12th.
I further inform you that the Executive Committee of Junta was of the opinion that your thesis should be printed as an issue of the Proceedings of the Faculty of Porto.
For the good of the Nation (. . .)»[71]

In fact, on the 19 December Leite Pinto wrote to Aniceto Monteiro a letter marked "Private", in which he explained all the Junta's decisions. These included a directive determining that the doctoral dissertation «Sur l'additivité des noyaux de Fredholm» should be published in a first edition by "Anais da Faculdade de Ciências do Porto" (The Annals of the Faculty of Sciences of Oporto). A second edition of the thesis was published in 1937 in the first volume of *PORTUGALIAE MATHEMATICA,* an international scientific journal on mathematics published in Portugal...

The rest of the story, after his return to Portugal, is well known and we can conclude that the five years that António Monteiro spent in Paris were determinant for his future career.

7. Aknowledgements

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[69] (AFCT: 1429, 49)
[70] See letter in note 44
[71] (AFCT: 1429, 53)

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