The microscopy studies of Román Alberca Lorente

F. Vera Sempere

Emeritus professor. Department of Pathology, Universitat de València, Valencia, Spain.

ABSTRACT

The figure of Román Alberca Lorente (1903-1967) has received well-deserved social and scientific recognition in Spain, mainly due to his work as a neurologist and psychiatrist, which is certainly the best-known feature of his life.

However, knowledge of his microscopy research activity during his training is more limited and restricted. He initially conducted this research at the laboratory of the Residencia de Estudiantes, under the direction of Pío del Río-Hortega, and later at the Institut Pasteur in Paris, with Levaditi. His microscopy activity, which concluded in 1928, represents a solid scientific foundation on which Alberca's neuropsychiatric activity is built.

This study, based on the analysis of different documentary sources, reviews in detail the microscopy work of Alberca. The original publications derived from this research were reviewed to assess the relevance of his contributions. The data obtained in this analysis are contextualised against the characteristics of the laboratories in which Alberca worked, as well as the known facts about his life.

Finally, the article addresses the circumstances surrounding Alberca's scientific transition in 1928 from histopathological research to neuropsychiatric healthcare, commenting on the competitive examinations that Alberca sat. These data are analysed in the context of the Spanish Histological School and the institutionalisation of psychiatry in Spain over the course of the 1920s.

KEYWORDS

Román Alberca Lorente, Residencia de Estudiantes, Pío del Río-Hortega, Spanish Histological School, Institut Pasteur, Constantin Levaditi

Introduction

The figure of Román Alberca Lorente (Alcázar de San Juan, 1903 – Murcia, 1967) has received well-deserved social and scientific recognition in Spain, mainly due to his work as a neurologist and psychiatrist, which is the best-known feature of his life.

Alberca worked mainly in Murcia,[1] where he directed the Provincial Psychiatric Hospital for 40 years. He also dedicated time to teaching, becoming the first chair of psychiatry at the University of Valencia,[2] winning the position after a contest for transfer from the University of Salamanca,[3] where he had become chair by competitive examination.[4] Years later, in Valencia, Alberca promoted the creation of a university school of psychiatry, an objective he finally achieved two years before his death.[5]

However, knowledge and dissemination of his microscopy research are more limited. He undertook this activity during his medical training,[1] and it became a solid scientific basis on which he developed his neuropsychiatric activity.

Corresponding author: Dr Francisco Vera Sempere
E-mail: fco.jose.vera@uv.es

Received: 27 September 2022 / Accepted: 29 November 2022

He began his microscopy research during his medical studies. During that time, Alberca obtained a solid histological foundation at the Laboratory of Normal and Pathological Histology (LHNP, for its Spanish initials) of the Residencia de Estudiantes, directed by Pío del Río-Hortega.[6] At the same time as he received this histological training, Alberca attended the neurology and psychiatry department at Hospital General in the mornings. This service was directed by the Valencian José Sanchís Banús, whom Alberca saw as his master.

In October 1920, he began working at del Río-Hortega's laboratory, reporting to the Junta de Ampliación de Estudios (Board for Study Extensions, JAE).[6] Still a student, Alberca became one of the first to attend this laboratory to learn from del Río-Hortega the techniques of the Spanish Histological School. In the JAE's report for the 1922-23 academic year, Román Alberca is already named among the students regularly attending del Río-Hortega's laboratory.[7] In successive reports up to the period 1928-30, his name continues to appear as an assistant at this laboratory.[8]

In addition to this link to del Río-Hortega's laboratory, Alberca travelled in March 1926 to the Institut Pasteur in Paris thanks to a grant from the JAE.[1,9] There, Alberca completed his training, now under Constantin Levaditi, who became his third great master.

In 1928, Alberca became chief clinician at the Provincial Psychiatric Hospital in Murcia,[1] and his subsequent work focused on neuropsychiatric practice. Despite his lifelong dedication to clinical practice, his contributions to microscopy would constantly define his scientific career.

Methods

This article will focus on the microscopy studies of Alberca, analysing the contents and relevance of his scientific work. For this analysis, several sources were consulted, including the reports of the JAE[10]; del Río-Hortega's correspondence, made available digitally by the Spanish Society of Neurology (SEN)[11]; the original content of Alberca's doctoral thesis[12]; his original publications; and his book *Neuraxitis ectotropas,*[13] which he published several years after the end of the Spanish Civil War, and which includes many images from his previous microscopy research. References to his academic activity in Valencia were obtained from the yearbooks of his school of medicine, which are available digitally today thanks to the initiative of Prof. Barcia Goyanes.[14,15]

The data obtained from these sources are contextualised against the characteristics of the laboratories where Alberca performed his work and the known facts about his life, which were recently expanded by several articles[2,16,17] published in *Neurosciences and History*, a journal of the SEN, of which Alberca was president between 1959 and 1961.[16]

Results

The work of Román Alberca at the Laboratory of the Residencia de Estudiantes and his first microscopy contribution

The first mention of Román Alberca in the reports of the JAE was in the 1922-23 academic year,[7] in which he is named as an assistant at the LHNP, directed by Pío del Río-Hortega.

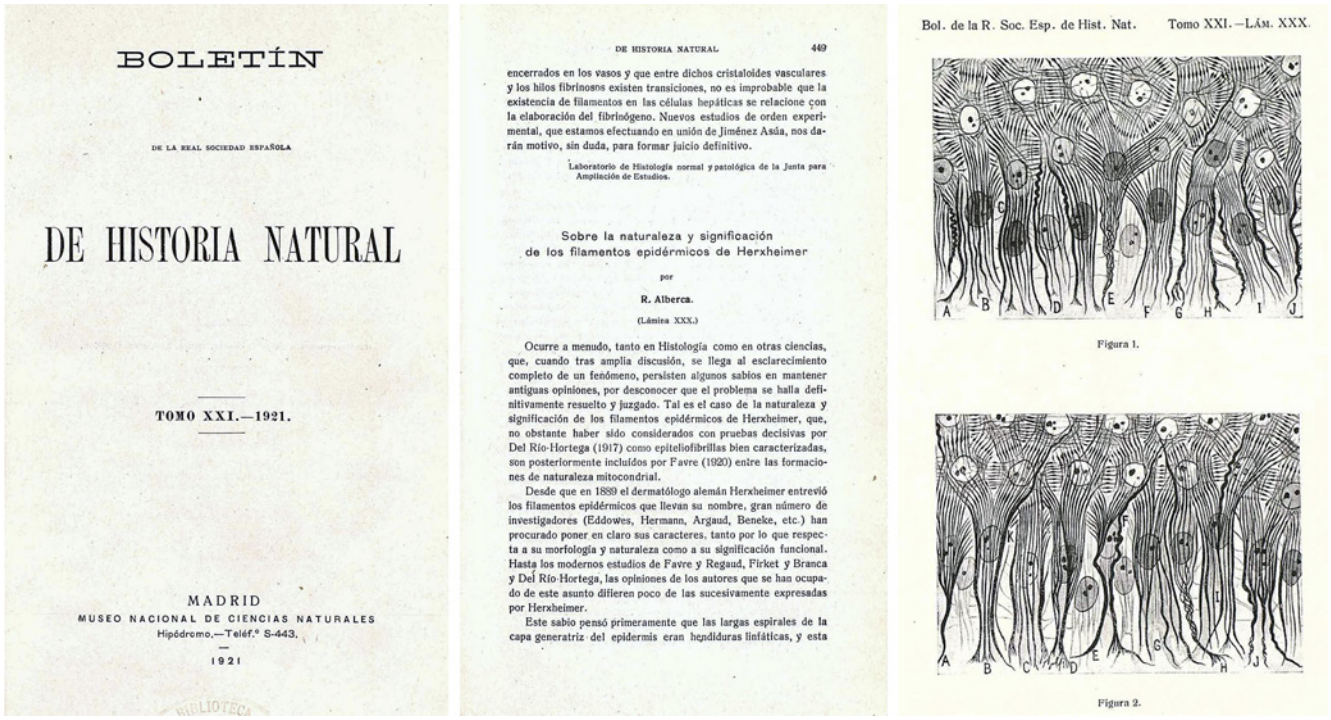
In this report, he is described as a medical student; as we know, Alberca did not graduate in Medicine in Madrid until 1925.[16] His name was followed by those of another four medical students, in the following order: Rafael Vara López, Isaac Costero Tudanca, Antonio Llombart Rodríguez, and Alfonso Peña Pineda.

Despite what this report says,[7] Alberca had almost certainly began working at Pío del Río-Hortega's laboratory earlier than this; some documents show that Alberca had already published an article in 1921 as a result of his work at this laboratory.

It has also been reported that, in the third year of his medical degree, Alberca began attending del Río-Hortega's laboratory in the afternoons.[16] Therefore, we should consider that Román Alberca was probably the first medical student to attend this laboratory, which operated from October 1920 until the Spanish Civil War.[6]

Several other reports also support this consideration. The second student of Pío del Río-Hortega mentioned in the JAE's report is Rafael Vara López.[7] Vara, who later focused on surgery and neurosurgery, wrote in 1965 that he began attending the LHNP in October 1921, and that Pío del Río-Hortega, Felipe Jiménez Asúa, Carlos Collado, and Román Alberca were working there in the afternoons (from four in the afternoon to ten at night).[18]

The other two students named in the report, Antonio Llombart Rodríguez and Isaac Costero Tudanca, who were from Valencia and Zaragoza, respectively, started attending the laboratory later, during the summer holi-



BOLETÍN

DE LA REAL SOCIEDAD ESPAÑOLA

DE HISTORIA NATURAL

TOMO XXI.—1921.

MADRID
MUSEO NACIONAL DE CIENCIAS NATURALES
Hipódromo.—Teléf.º S-443.
1921

DE HISTORIA NATURAL 449

encerrados en los vasos y que entre dichos cristaloides vasculares y los hilos fibrinosos existen transiciones, no es improbable que la existencia de filamentos en las células hepáticas se relacione con la elaboración del fibrinógeno. Nuevos estudios de orden experimental, que estamos efectuando en unión de Jiménez Asúa, nos darán motivo, sin duda, para formar juicio definitivo.

Laboratorio de Histología normal y patológica de la Junta para Ampliación de Estudios.

Sobre la naturaleza y significación de los filamentos epidérmicos de Herxheimer

por

R. Alberca.

(Lámina XXX.)

Ocurre a menudo, tanto en Histología como en otras ciencias, que, cuando tras amplia discusión, se llega al esclarecimiento completo de un fenómeno, persisten algunos sabios en mantener antiguas opiniones, por desconocer que el problema se halla definitivamente resuelto y juzgado. Tal es el caso de la naturaleza y significación de los filamentos epidérmicos de Herxheimer, que, no obstante haber sido considerados con pruebas decisivas por Del Río-Hortega (1917) como epiteliofibrillas bien caracterizadas, son posteriormente incluídos por Favre (1920) entre las formaciones de naturaleza mitocondrial.

Desde que en 1889 el dermatólogo alemán Herxheimer entrevió los filamentos epidérmicos que llevan su nombre, gran número de investigadores (Eddowes, Hermann, Argaud, Beneke, etc.) han procurado poner en claro sus caracteres, tanto por lo que respecta a su morfología y naturaleza como a su significación funcional. Hasta los modernos estudios de Favre y Regaud, Firket y Branca y Del Río-Hortega, las opiniones de los autores que se han ocupado de este asunto difieren poco de las sucesivamente expresadas por Herxheimer.

Este sabio pensó primeramente que las largas espirales de la capa generatriz del epidermis eran hendiduras linfáticas, y esta

Bol. de la R. Soc. Esp. de Hist. Nat. Tomo XXI.—LÁM. XXX.

Figura 1.

Figura 2.

Figure 1. The first microscopy work by Román Alberca in 1921, when he was still a student of medicine and aged just 18 years. The research was conducted at the laboratory of the Residencia de Estudiantes and published in the *Boletín de la Real Sociedad Española de Historia Natural*,[20] where Alberca was admitted as an ordinary member with the support of del Río-Hortega.

days. Antonio Llombart worked alongside Alberca years later, as a member of the faculty of the School of Medicine in Valencia.[15]

The last student mentioned is Alfonso Peña Pineda, son of Leonardo de la Peña Díaz, who met Pío del Río-Hortega during their time at school in Valladolid.[19] There is no reference to the date that Peña Pineda, who many years later would become chair of urology in Madrid, started working at the LHNP; subsequent reports of the JAE do not mention him.

The first publication by Alberca[20] dates to 1921, when he was still a student and aged just 18 years. It was published in the *Boletín de la Real Sociedad Española de Historia Natural* (*BRSEHN*), which, as was often the case with works by del Río-Hortega and his students, also appeared as a supplement to the laboratory's journal (*Trabajos del Laboratorio de Histopatología*, issue 20), supported by the JAE.[21]

In this first publication, Alberca analysed a topic that had previously been addressed by his master. In 1917, del Río-Hortega had published an extensive monograph in Cajal's journal[21] on epithelial fibrils, analysed in many invertebrates and lower vertebrates, studying Herxheimer spirals,[22] among other topics. In his work, Alberca uses the first variant of Achúcarro's (1880-1918) tannin–ammoniacal silver method to study epithelial fibrils of the epidermis and mucosal membranes at different locations.

Alberca provides a detailed description of the results obtained. The study includes two beautiful gouache paintings (Figure 1) illustrating his results. These figures show the accuracy and beauty of the drawings by del Río-Hortega[23] and his students, underscoring the important artistic facet of the scientific production of the Spanish Histological School.[24]

The study published in *BRSEHN* is signed by Román Alberca alone. This reminds us of the strict authorship criteria observed in all publications by del Río-Hortega and his students.[6] In fact, in the publications by del Río-Hortega, only his own signature appears, with only a few exceptions of collaborative works performed together with some of his students.[6] Similarly, the works by his students, though inspired by the ideas of their master, and always under his direction and supervision, are exclusively signed by them. However, the publications of these students frequently concluded with some express acknowledgement of their master.

Although it was signed by Alberca as the sole author, when reading the article we realise how the work was directed and supervised, down to the smallest detail, by his master. In 1977, del Río-Hortega[22] had studied the morphology of epithelial fibrils, analysing the spiral filaments that had been described in 1889 by the Austrian dermatologist Herxheimer. Del Río-Hortega demonstrated the morphological identity of epithelial fibrils, refuting the possible mitochondrial character of Herxheimer spirals.[22]

One year before Alberca's publication, Favre had published in France a work on Herxheimer spirals, in *Comptes Rendus des Séances de la Société de Biologie et de ses Filiales* (*CRSSB*).[25] Favre's work lacked bibliographical references and postulated once more the association between Herxheimer spirals and the chondriome. The French publication omitted to mention the extensive monograph by del Río-Hortega,[22] overlooking also Cajal's *Manual of normal histology and micrographic technique*, whose 1921 edition[26] fully supported del Río-Hortega.

Using the first variant of Achúcarro's method, Alberca demonstrated that his master's technique was superior to Favre's haematoxylin study. Alberca denies the association with the chondriome, making some highly accurate observations on epithelial fibrils and desmosomes. Alberca's findings are described with such detail and thoroughness that they almost could have been obtained with electron microscopy. Five years later, in a communication of a modification to his silver carbonate technique to stain epithelial fibrils, del Río-Hortega himself mentioned the quality of the work by his student Alberca.[27]

The relevance of the article by Alberca, published in Spanish, is reflected by the fact that it was cited, three years later, in the well-known treatise on cellular biology published in Chicago by Edmund Vincent Cowdry.[28] This latter kept correspondence with del Río-Hortega,[11] and was familiar with the research performed at the LHNP, thanks to Wilder Penfield. The lack of mitochondrial character or association of Herxheimer spirals, mentioned by del Río-Hortega[22] and Alberca,[20] was confirmed by electron microscopy 24 years later.[29]

This first publication by Alberca in the *BRSEHN* merits further comment. Its publication in this journal means that the work was presented at one of the meetings of the Royal Spanish Society of Natural History (RSEHN). The meetings of the RSEHN were usually held on the first Wednesday of each month, at the Museum of Natural History near the Hipódromo de la Castellana, very close to the Residencia de Estudiantes. Indeed, the article in *BRSEHN* mentions that Alberca presented the work in a session held on Wednesday, 7 December 1921.[20]

Alberca was not an ordinary nor an associate member of the RSEHN. At the beginning of the session, the secretary of the RSEHN proceeded first to accept Alberca (reported as a medical student), and Dr Joaquín Luna (another student of del Río-Hortega, who later focused on gynaecology), as ordinary members. Both were introduced and supported by Pío del Río-Hortega. Alberca's admission to the RSEHN was mentioned in the following issue of the *BRSEHN* of 1922, in which Román Alberca (medical student) was named as an ordinary member, with residence at number 48, Calle Moratín, in Madrid.[30]

At the session, Alberca was accompanied by del Río-Hortega and Felipe Jiménez Asúa. Before Alberca's presentation, del Río-Hortega presented a study on liver fibrogenesis,[31] as well as a communication on the argentophilic bodies in kidney cells.[32] Jiménez Asúa intervened after Alberca, presenting a work on the cyanophilic cells and mastocytes.[33]

This was Alberca's debut appearance at the RSEHN, aged 18 years, and the publication of his first study in the *BRSEHN*. This first study soon gave way to a series of scientific publications by Alberca that, considering their number and especially the quality of their contents, give us an idea of the relevance of his microscopy work.

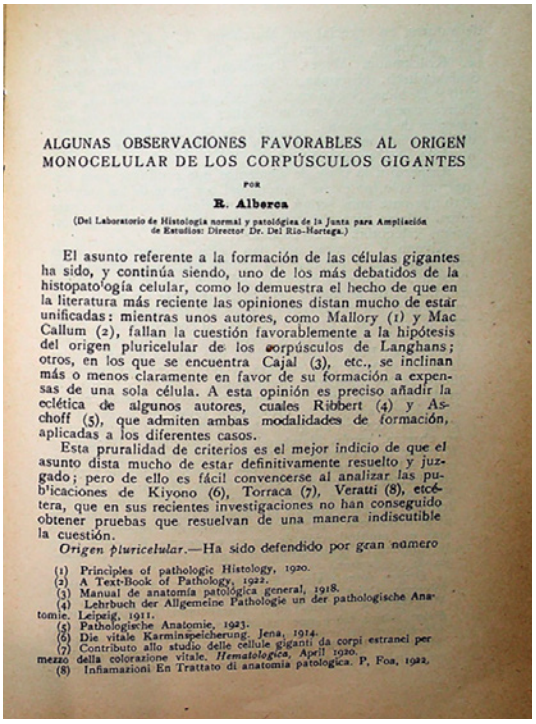
Later publications by Alberca at del Río-Hortega's laboratory

The second microscopy study by Román Alberca mentioned in the JAE's[7] report for the period 1922-23 was published as a supplement to issue 29 of the journal *Trabajos del Laboratorio de Histopatología*, under the title "Algunas observaciones favorables al origen monocelular de los corpúsculos gigantes" (Some favourable observations on the single-cell origin of giant corpuscles) (Figure 2).[34] Once more, Alberca was still a student when he published this second study, graduating in medicine with special distinction in 1925.[16,35] There is no evidence that this study was published in another journal or bulletin of a society, such as the *Boletín de la Sociedad Española de Biología* (*BSEB*) or *BRSEHN*, which were the two media through which del Río-Hortega and his students most frequently published.[6]

In this second work, Alberca addresses the origin of multinucleated giant cells, supporting the hypothesis that they are of single-cell origin, as mentioned by del Río-Hortega and Jiménez Asúa two years earlier.[36] In this study, Alberca used his master's silver carbonate technique, referring to other studies that he was conducting on elephantiasis (these are discussed later in the review). This publication on the origin of giant cells also includes original drawings by Alberca, shown in a beautiful gouache illustration depicting the mechanism of multinucleation (Figure 2).

In December 1922, Alberca presented a third study to the SEB on the histology of elephantiasis, which was published as a supplement to issue 31 of *Trabajos del Laboratorio de Histopatología*.[37] To expand its reach, the work was also published in *Los Progresos de la Clínica* in 1923 (Figure 3).[38]

The publication reported five cases of elephantiasis (two in the scrotum and three in the vulva). Samples were studied with del Río-Hortega's silver carbonate method and the first variant of Achúcarro's method, as well as the trichrome stains described by Cajal and Abelardo Gallego (also a student of del Río-Hortega[6]), and toluidine blue stain. In this study, Alberca shows perfect knowledge of all the techniques used. The study was also illustrated with 10 figures, including two photomicrography images (taken with a Leitz photomicrography system, which is described by Isaac Costero in his *Crónica de una vocación*[39]). However, and despite this, the most valuable images are those made using the gouache tech-



ALGUNAS OBSERVACIONES FAVORABLES AL ORIGEN MONOCELULAR DE LOS CORPÚSCULOS GIGANTES

POR

R. Alberca

(Del Laboratorio de Histología normal y patológica de la Junta para Ampliación de Estudios: Director Dr. Del Río-Hortega.)

El asunto referente a la formación de las células gigantes ha sido, y continúa siendo, uno de los más debatidos de la histopatología celular, como lo demuestra el hecho de que en la literatura más reciente las opiniones distan mucho de estar unificadas: mientras unos autores, como Mallory (1) y Mac Callum (2), fallan la cuestión favorablemente a la hipótesis del origen pluricelular de los corpúsculos de Langhans; otros, en los que se encuentra Cajal (3), etc., se inclinan más o menos claramente en favor de su formación a expensas de una sola célula. A esta opinión es preciso añadir la ecléctica de algunos autores, cuales Ribbert (4) y Aschoff (5), que admiten ambas modalidades de formación, aplicadas a los diferentes casos.

Esta pruralidad de criterios es el mejor indicio de que el asunto dista mucho de estar definitivamente resuelto y juzgado; pero de ello es fácil convencerse al analizar las publicaciones de Kiyono (6), Torraca (7), Veratti (8), etcétera, que en sus recientes investigaciones no han conseguido obtener pruebas que resuelvan de una manera indiscutible la cuestión.

Origen pluricelular.—Ha sido defendido por gran número

(1) Principles of pathologic Histology, 1920.
(2) A Text-Book of Pathology, 1922.
(3) Manual de anatomía patológica general, 1918.
(4) Lehrbuch der Allgemeine Pathologie un der pathologische Anatomie. Leipzig, 1911.
(5) Pathologische Anatomie, 1923.
(6) Die vitale Karminspeicherung. Jena, 1914.
(7) Contributo allo studio delle cellule giganti da corpi estranei per mezzo della colorazione vitale. *Hematologica*, April 1920.
(8) Infiamazioni En Trattato di anatomia patologica. P. Foa, 1922.

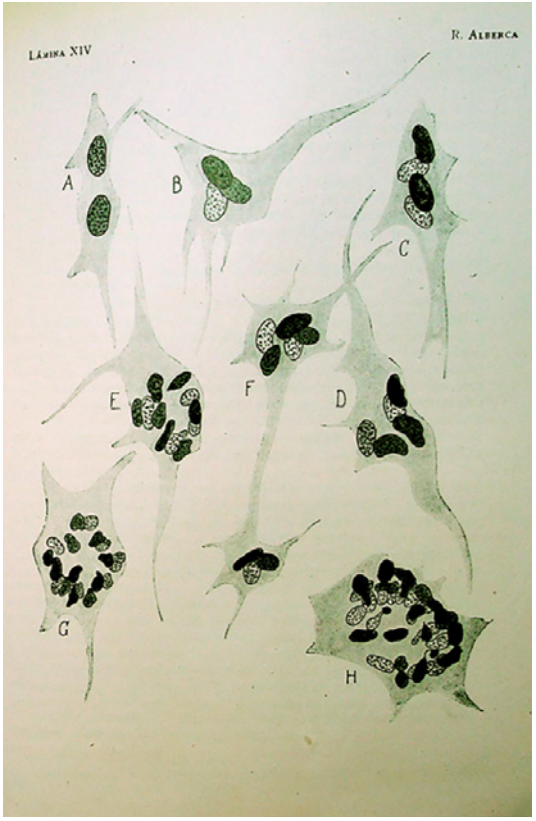
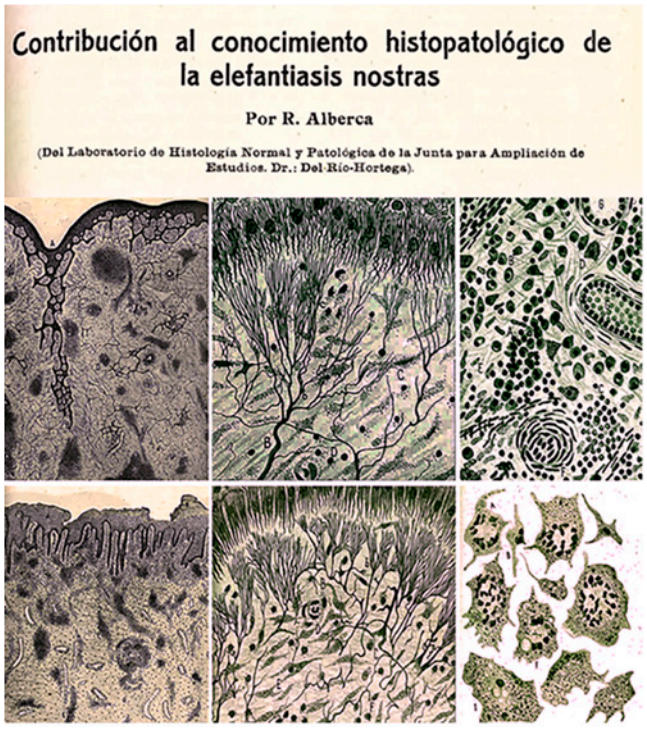


Figure 2. The second publication by Alberca, published in 1923 in issue 29 of the journal *Trabajos del Laboratorio de Histopatología*. He was also still a student when the work was published.[36]


Contribución al conocimiento histopatológico de la elefantiasis nostras

Por R. Alberca

(Del Laboratorio de Histología Normal y Patológica de la Junta para Ampliación de Estudios. Dr.: Del Río-Hortega).

Figure 3. The third study by Alberca, this time on elephantiasis nostras, and published in 1923 in the journal *Los Progresos de la Clínica*,[38] edited by José Sanchís Banús. The publication features many illustrations, including photomicrography images, as well as remarkable gouache images, such as the six drawings in this figure.

nique, once more reflecting Alberca's mastery in drawing microscopy images (Figure 3).

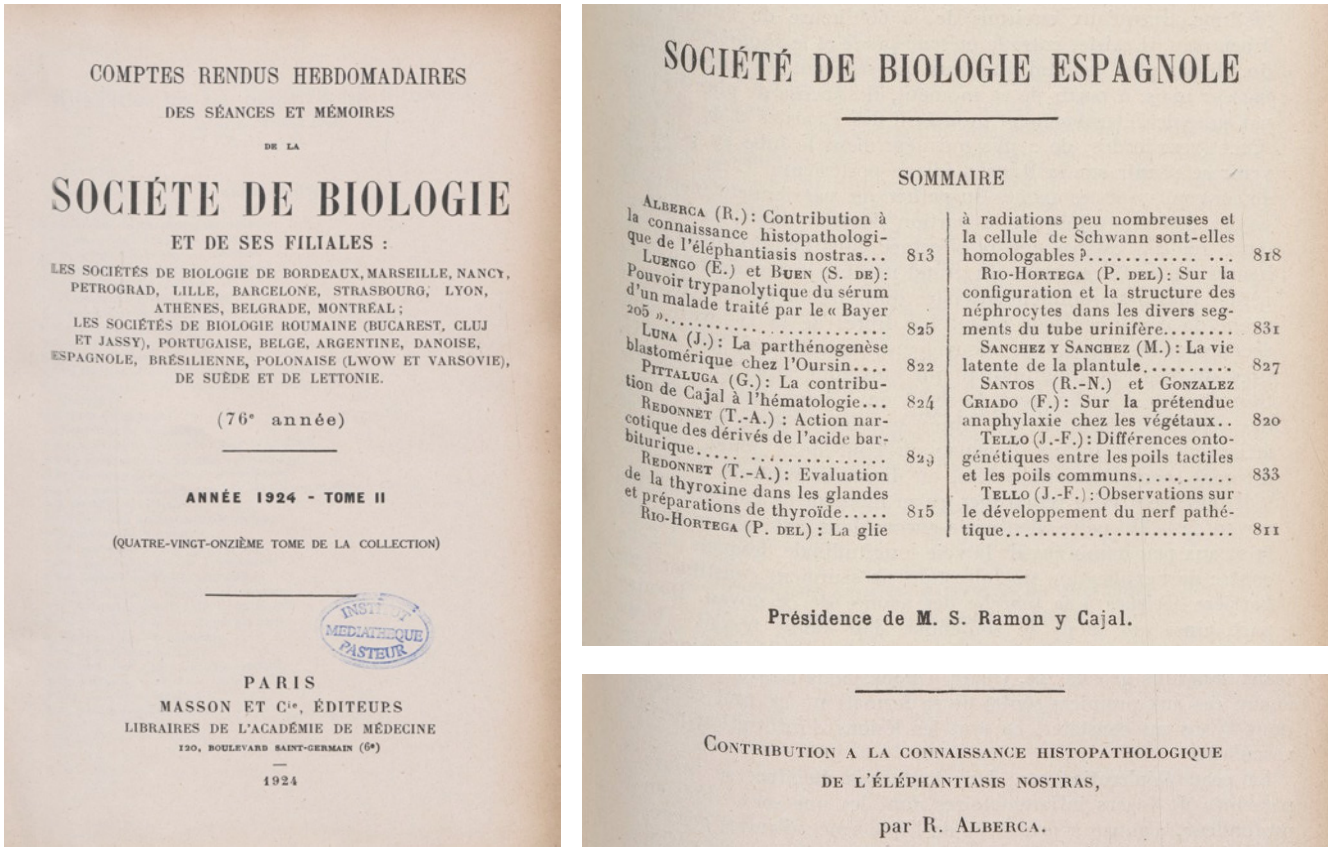
This study on elephantiasis, in addition to its appearance in the journal *Los Progresos de la Clínica,*[38] was also published in French in 1924, although in a shorter version, in *CRSSB* (Figure 4).[40] Let us now consider the circumstances leading to this publication in a French journal one year later. The French Société de Biologie was founded in 1848 by Claude Bernard, and started publishing its *Comptes Rendus* on a weekly basis the following year. The society was internationally renowned and, from 1921, this periodic publication also began to include the reports and communications of a series of affiliated or twin scientific societies, mostly from French-speaking countries, which progressively adhered to this journal.

In 1923, coinciding with the 75th anniversary of the foundation of the Société de Biologie, the chair of General Pathology at Universidad Central, Amalio Gimeno Cabañas, travelled to Paris to represent the Universidad de Madrid and the Spanish Royal Academy of Sciences at the society's sessions. After this visit, the French journal started to publish in collaboration first with the Barcelona Society of Biology (1923) and, one year later, with the Spanish Society of Biology (SEB). In this context, del Río-Hortega published in 1924 two studies in *Comptes Rendus*[41,42]; in the same year and the same issue of the journal, Alberca published his study on elephantiasis nostras in French (Figure 4).[40]

The French version of the study on elephantiasis is shorter than the Spanish version published in *Los Progresos de la Clínica*. Both publications take a mainly descriptive, morphological approach. The study focuses on the changes detectable in elephantiasis nostras, or in other words, the types of cutaneous elephantiasis not caused by filariasis.

Using the techniques of the Spanish Histological School, Alberca summarised the changes observable at the epidermal and dermal levels in the course of elephantiasis, both in early and in chronic forms. Alberca always linked his findings with those reported in his previous publications. Thus, at the epidermal level, he emphasises the hypertrophy of tonofibrils, referring to his previous study on Herxheimer spirals.[20] He notes that he did not find the melanic hyperpigmentation previously reported by Mosely and Morison in elephantiasis nostras in black patients. At the dermal level, together with the description of inflammatory infiltrates, Alberca reports the presence of hypertrophic fibroblasts that would indicate the possible development of giant cells, which he links to his previous study on the so-called "giant corpuscles," published a year earlier.[35]

A year later, at the SEB session of 26 February 1925, Alberca presented a new study performed at the LHNP under the direction of del Río-Hortega, which he published in the *BSEB* in 1926 (Figure 5).[43] The microscopy material, now obtained by Alberca, is not limited to purely morphological-descriptive aspects, as was the case in his previous publications, but also addresses clearly morphofunctional aspects referring to the microglia described by his master. This study was performed at the same time that Alberca was receiving clinical training



COMPTES RENDUS HEBDOMADAIRES

DES SÉANCES ET MÉMOIRES

DE LA

SOCIÉTE DE BIOLOGIE

ET DE SES FILIALES :

LES SOCIÉTÉS DE BIOLOGIE DE BORDEAUX, MARSEILLE, NANCY, PETROGRAD, LILLE, BARCELONE, STRASBOURG, LYON, ATHÈNES, BELGRADE, MONTRÉAL ;
LES SOCIÉTÉS DE BIOLOGIE ROUMAINE (BUCAREST, CLUJ ET JASSY), PORTUGAISE, BELGE, ARGENTINE, DANOISE, ESPAGNOLE, BRÉSILIENNE, POLONAISE (LWOW ET VARSOVIE), DE SUÈDE ET DE LETTONIE.

(76e année)

ANNÉE 1924 - TOME II

(QUATRE-VINGT-ONZIÈME TOME DE LA COLLECTION)

PARIS
MASSON ET Cie, ÉDITEURS
LIBRAIRES DE L'ACADÉMIE DE MÉDECINE
120, BOULEVARD SAINT-GERMAIN (6e)
—
1924

SOCIÉTÉ DE BIOLOGIE ESPAGNOLE

SOMMAIRE

Présidence de M. S. Ramon y Cajal.

CONTRIBUTION A LA CONNAISSANCE HISTOPATHOLOGIQUE DE L'ÉLÉPHANTIASIS NOSTRAS,

par R. ALBERCA.

Figure 4. French-language edition of Alberca's work on the histopathology of elephantiasis, published in 1924 in *Comptes Rendus*, in the collaborative edition that started that year, which included the sessions of the Spanish Society of Biology.[40]

from his other great master José Sanchís Banús, at Hospital Provincial in the mornings.

To expand the reach of his findings, Alberca also published this work in *Archivos de Medicina, Cirugía y Especialidades* (*AMCE*) in 1925.[44] *AMCE* was a weekly journal of the Spanish Medical-Surgical Academy, which was founded by José Madinaveitia and directed at that time by doctor Sanchís Banús. It should be noted that Alberca also published a study with Sanchís Banús the same year, addressing induced madness[45]; this study, together with a historical review of aphasia, represent his first neuropsychiatric publications.[16]

In the introduction to the article, Alberca highlighted the key factors in performing his study, revealing the scientific, histopathological, and neurological environment in which he worked and how the article was developed. He notes that he conducted his research over the course of a series of studies performed together with his colleague González Páez, another student of Sanchís Banús,[46] on the effect of the intraspinal injection of horse serum in rabbits.

This colleague of Alberca's, Senén González Páez, was one of the first to introduce the so-called Carroll method for treating schizophrenia.[47] Thus, González Páez published four clinical cases in *AMCE* of patients treated with the Carroll method, which was also the focus of his doctoral thesis in 1925.

The Carroll method consisted of extracting 5 cm^3 of cerebrospinal fluid, which was replaced with inactivated horse serum; this was believed to improve the symptoms of schizophrenic patients after causing aseptic meningitis. This therapeutic method was based on the previous experience of Constantin von Monakow (1853-1930), who considered that the most important lesional substrate in schizophrenia was an alteration in the absorption and defence capacity of choroid plexi.[48]

The topic addressed by González Páez was a subject of great interest and relevance at the time. At the end of his study, Alberca[43] mentions once more the thesis of González Páez, which reported the inflammatory phenomena and haemorrhagic suffusions that occur in the brain after intraspinal injection of horse serum.

Working with Alberca, González Páez conducted the histological examination of the samples at del Río-Hortega's laboratory at the Residencia de Estudiantes. Thanks to a 1927 publication in Peru,[49] we know that another researcher interested in this topic was Pedro Weiss Harvey, a Peruvian student of del Río-Hortega who attended the LHNP in 1922-24. The study by González Páez finally refuted the possible effectiveness of Carroll's method, and suggested that the improvements reported by Carroll in schizophrenia were probably spontaneous remissions, concluding that there was still no effective cure for dementia praecox.[48]

Alberca, who had collaborated with González Páez in the development of his thesis with experiments on rabbits, observed that some animals whose spinal cord had been accidentally punctured, whether during extraction of cerebrospinal fluid or injection of horse serum, developed a spinal lesion with microglial involvement; this was potentially an appropriate model to study the cells described by del Río-Hortega[50] in 1919, which some German authors had begun referring to as Hortega cells.[51]

This animal model clearly presented some advantages. In the rabbit, the spinal cord has lower levels of microglia than the brain or cerebellum. Similarly, del Río-Hortega had used the brains of young cats, due to the limited abundance of microglia in the cerebral cortex of cats of that age. Alberca then aimed to reproduce his master's studies, using the spinal cord of rabbits and causing lesions with fine-needle puncture.[43,44] Animals were euthanised at 12, 24, or 48 hours and the spinal cord was fixed in formol-bromide and stained with the del Río-Hortega's silver carbonate method.

Based on his findings, Alberca opposed the arguments of Metz and Spatz,[51] who considered microglial cells to be static, without the ability to move. In animals euthanised at 12 hours, Alberca only observed small, microhaemorrhagic foci at the lesion site, with microglia only appearing in peripheral zones. At 24 hours, haemorrhagic foci were accompanied by granuloadipose bodies, whose number increased in animals euthanised at 48 hours, with the peripheral zones showing microglial elements of normal appearance. This late stage is illustrated in the study in an etched plate, which Alberca used again years later in his monograph on neuraxitis ectotropas.[13]

Based on these findings, Alberca highlights the capacity of microglia to migrate from peripheral territories to the lesion site through protoplasmic movements. He identified these movements by the projection of pseudopods and retraction of appendices, and observed microglial proliferation by mitotic division in the lesion focus, as well as the transformation into granuloadipose bodies, given the great voracity of microglia in the digestion of lipids and erythrocyte remnants.

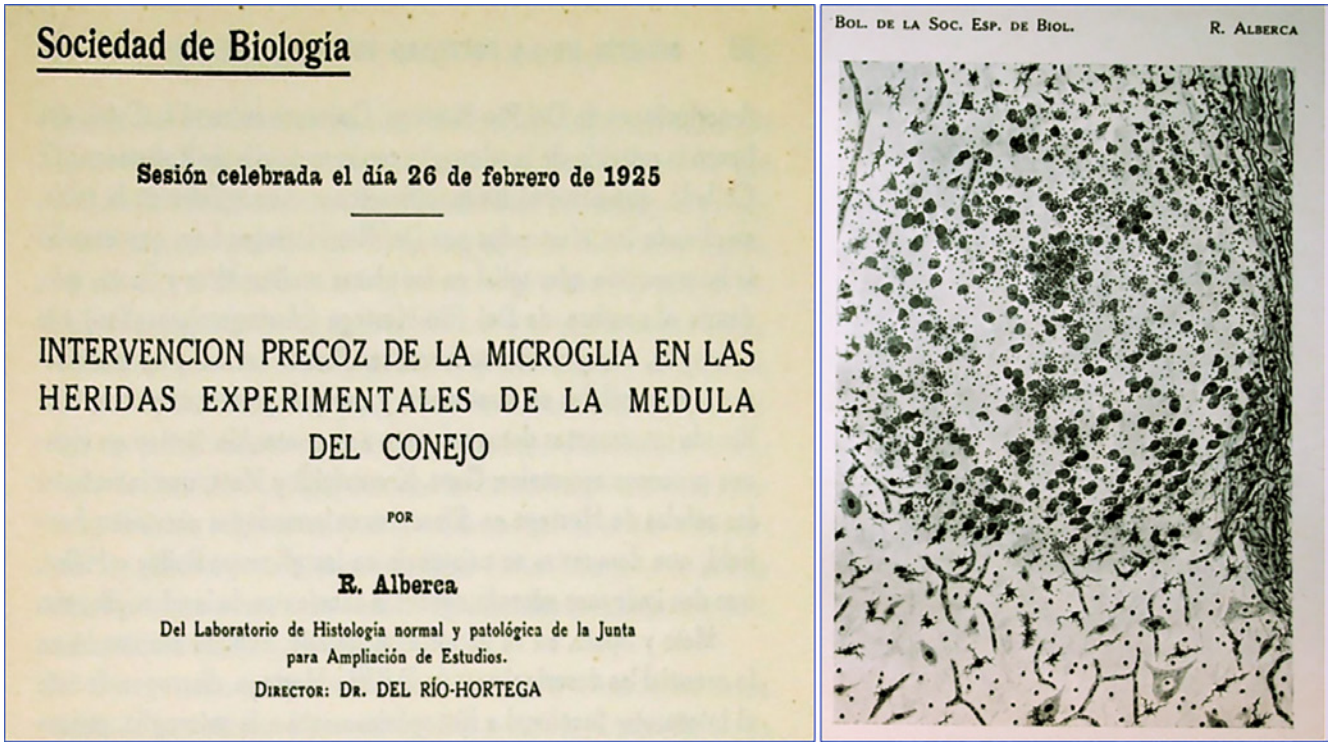
He presented the content of this work to the SEB on 26 February 1925, and it is known that a year later, in March 1926, Alberca travelled to Paris with a grant to work at the Institut Pasteur.

Alberca at the Institut Pasteur

The JAE's report for the period 1924-26 mentions the granting of a 4-month allowance to Román Alberca Lorente to travel to England and France in order to study the "Histopathology of mental diseases and especially of schizophrenias," noting that the grant period would start on 1 March 1926.[52(p128)]

The subject of the grant joins the two disciplines already studied by Alberca (histopathology and neuropsychiatry), and the allocated sum would help him deepen his knowledge. The Royal Order of 19 February 1926, published in the *Gaceta de Madrid*, established the award at 24.16 pesetas per day for the first and last month, and 14.16 pesetas per day for the other two months.[9]

As mentioned in the JAE's report, the initial objective of the grant was for Alberca to go first to England to perform histopathological studies on schizophrenia.[15] At this first destination, he was supposed to attend the neuropathology laboratory at Maudsley Hospital in London,



Sociedad de Biología

Sesión celebrada el día 26 de febrero de 1925

INTERVENCION PRECOZ DE LA MICROGLIA EN LAS HERIDAS EXPERIMENTALES DE LA MEDULA DEL CONEJO

POR

R. Alberca

Del Laboratorio de Histología normal y patológica de la Junta para Ampliación de Estudios.

Director: Dr. DEL RÍO-HORTEGA

Bol. de la Soc. Esp. de Biol. R. Alberca

Figure 5. Alberca's publication in *BSEB* from 1926,[43] an experimental work performed using spinal punctures in rabbits, analysing the migration of microglia with the silver carbonate technique developed by his master del Río-Hortega. The experimental work reported was conducted in the context of the thesis of his colleague Senén González Páez, also a student of Sanchís Banús.

where Frederick Walter Mott worked. Del Río-Hortega was very familiar with this laboratory, as his friend and close collaborator Miguel Prados Such[53] had also visited it years earlier thanks to a grant from the JAE. As a result of his stay in England, Prados Such had published many studies with Frederick Mott, using del Río-Hortega's silver carbonate technique,[54,55] as well as a study on the anatomical pathology of schizophrenia in *AMCE* in 1925.[56] As was later the case with Alberca, Miguel Prados Such transitioned in his scientific career from histopathology to psychiatry. Years later, after the Spanish Civil War, Miguel Prados took exile in Canada, where, thanks to the contacts of del Río-Hortega, he worked as lecturer of psychiatry at McGill University, becoming the most prestigious psychoanalyst in that country.[53]

With regard to the use and final destination of the grant awarded to Alberca, we know that soon after it was awarded (June 1926), Frederick Mott died in the city of Birmingham, and that Alberca ultimately only travelled to Paris to visit Constantin Levaditi's laboratory at the Institut Pasteur.

The circumstances of Alberca's arrival at this laboratory are not well known. It has been suggested that Levaditi had asked del Río-Hortega for a collaborator from his team to study the anatomical pathology of encephalitis.[16] Regarding this, there is evidence that Levaditi travelled to and stayed in Madrid in April 1925, one year before the grant was awarded to Alberca; there, he delivered three speeches on syphilis at the School of Medicine.[57] However, we have not found any data in the collection of

del Río-Hortega's letters[11] that provides any documentary support with regards to this possible request.

Nonetheless, the Institut Pasteur, and specifically the laboratory directed by Levaditi, was clearly a well-known institution to the JAE. This is demonstrated by the fact that Levaditi, together with Romme, published an article in Madrid, in the first issue of the JAE's journal *Residencia* describing the facilities of the Institut Pasteur and the lines of research that were developed there, together with pictures of the laboratory (Figure 6).[58]

Levaditi's laboratory was in fact the destination of several researchers awarded JAE grants. For instance, we should recall the figure of Augusto Navarro Martín, who in 1920-21 had performed several studies on experimental syphilis, which led to several publications, as well as his thesis on the treatment of syphilis with bismuth salts. Upon returning to Spain, Navarro Martín created a section for experimental studies on nervous system syphilis within the laboratory of brain physiology at the Residencia, directed by Rodriguez Lafora.

Similarly, and in parallel to Alberca at the Institut Pasteur, other holders of JAE grants simultaneously attended the laboratory. Such was the case of Evaristo Puerta Sánchez, who in 1927 conducted a study with Levaditi on the serological diagnosis of syphilis with the Meinicke flocculation reaction; or the Valencian Vicente Sanchís-Bayarri Lahoz, who also worked on syphilis and neurotropic viruses during the period 1926-27. Sanchís-Bayarri later extended his stay at the Institut Pasteur, becoming assistant to Levaditi in 1928. In 1932, he obtained the chair of Hygiene and Medical Microbiology of the School of Medicine in Valencia, joining Román Alberca as a member of the faculty,[15] as well as Antonio Llombart, another student of del Río-Hortega.

In May 1925, Levaditi returned to Madrid in a visit promoted from the JAE,[52(p327-8)] delivering six lectures on neurotropic ectodermosis, in which he addressed the study of poliomyelitis virus, herpes encephalitis virus, the neurovaccine, as well as two sessions including practical works and demonstrations. The title of the lecture delivered (neurotropic ectodermosis) was a term coined by Levaditi, who, after analysing encephalitis lethargica together with Harvier and Nicolaou, showed that viral agents have specific affinities for different tissues, and particularly those derived from the ectoderm; this led to the classification of viruses according to their tissue affinities.

By the time of Levaditi's second visit to Madrid, it seems obvious that Alberca had already begun his stay at the Institut Pasteur, and it is very likely that del Río-Hortega participated in organising the lectures delivered by Levaditi and funded by the JAE.

The JAE's report for the period 1926-28 refers to an additional grant awarded to Alberca, which was supplementary to the previous grant.[59(p15-6)] This new grant covered a period of 16 months, once more at Levaditi's laboratory at the Institut Pasteur, enabling Alberca to remain in Paris until July 1927.

Without a doubt, the laboratory that Alberca visited in Paris was a key institution in the development of European microbiology in the first half of the 20th century, being a pioneering centre in virology and immunology research, all under the direction of Constantin Levaditi, a Romanian researcher whose scientific profile merits some discussion.[60]

Constantin Levaditi (1874-1953) studied medicine in Bucharest, but spent his entire scientific career in France, working at the Institut Pasteur for 40 years. He joined the institute in 1901, working at the laboratory of the microbiologist Elie Metchnikof (1845-1916). After Levaditi defended his doctoral thesis in 1904, Émile Roux (1853-1933), cofounder and director of the Institut Pasteur, permitted him to lead his own independent laboratory, which he directed until he retired in 1940.

The first central topic of Levaditi's research was syphilis. He designed a silver staining technique for *Treponema pallidum* (Levaditi–Manouelian method), in addition to promoting the treatment of syphilis with bismuth salts. His other main field of research was virology, with the poliomyelitis virus being his main focus. Between 1909 and 1911, he and the Austrian Karl Landsteiner established the experimental basis for the vaccine against poliomyelitis, injecting live-attenuated viruses into monkeys. Furthermore, Levaditi and Pierre Lépine experimentally described the possible transmission of the poliovirus by the oral route. In addition, he designed a neurovaccine derived from cultures of brain cells, describing, among other aspects, the epidemic amaurosis associated with the Schilder-Foix syndrome.[60]

Alberca's studies at the Institut Pasteur

A few months after the start of his stay at the Institut Pasteur, Alberca actively collaborated in his first scientific

contribution at this institution. It was a study addressing the histological analysis of lesions present in the tongue mucosa during the course of foot-and-mouth disease. The work was presented to the Société de Biologie and published in the *CRSSB* in 1926 (Figure 7).[61]

The work was signed by Levaditi, Alberca, and the British veterinarian and virologist Ian Galloway. The latter, of Scottish origin, was also a visiting researcher at the Institut Pasteur, studying foot-and-mouth disease. A few years later, he became a well-known scientific figure in the field of this epizootic disease.[62]

The work was an experimental study performed by inoculating the viral agent of foot-and-mouth disease in the plantar area of the guinea pig. After generalisation of the viral infection, vesicles and pustules progressively appeared on the tongue. These were histologically studied by Alberca, using conventional histological techniques and del Río-Hortega's silver carbonate stain. During his stay in Paris, this technique would represent an excellent scientific passport for Alberca.

In this work, he describes and illustrates the intranuclear viral inclusions in the mucosal epithelium of the tongue, as well as the formation of intraepithelial vesicles and pustules, explaining the changes occurring in the network of epithelial fibrils using silver carbonate. The study underscores the lack of viral infection at the mesodermal level, reinforcing the pure, non-neurotropic character of ectodermosis in foot-and-mouth disease; all these findings reinforced the ideas previously proposed by Levaditi.

As a supplement to this experimental study, Alberca presented a new, mainly descriptive study to the Société de Biologie on 18 June 1927, with himself as the sole author, in which he analysed the epithelial regeneration processes in skin lesions to the leg and tongue mucosa of the guinea pig after infection with the aphthovirus. This study was published in the *CRSSB* in 1927 (Figure 8)[63] and described the process of regeneration of the cutaneous and mucosal epithelia by mitotic proliferation of the baseline epithelial layer, highlighting that this regeneration is more rapid in the case of tongue lesions than in plantar injuries.

Regardless of these works, it is clear that throughout the period 1926-27, Alberca mainly focused on the development of an extensive body of experimental work that became the basis for his doctoral thesis, which he presented in Madrid on 14 December 1927 (Figure 9). However, he took advantage of his stay at the Institut Pasteur to attend the lectures of the course on bacteriology, which led him to master the bacteriological techniques of ultraviruses and cell cultures. Furthermore, he also visited the anatomical pathology laboratory at La Salpêtrière on invitation by the physician Ivan Bertrand, corresponded with del Río-Hortega,[11] and reported some findings with the Spanish silver staining techniques.


RESIDENCIA

1926

Año I

MADRID

EL INSTITUTO PASTEUR DE PARIS Y SUS FILIALES

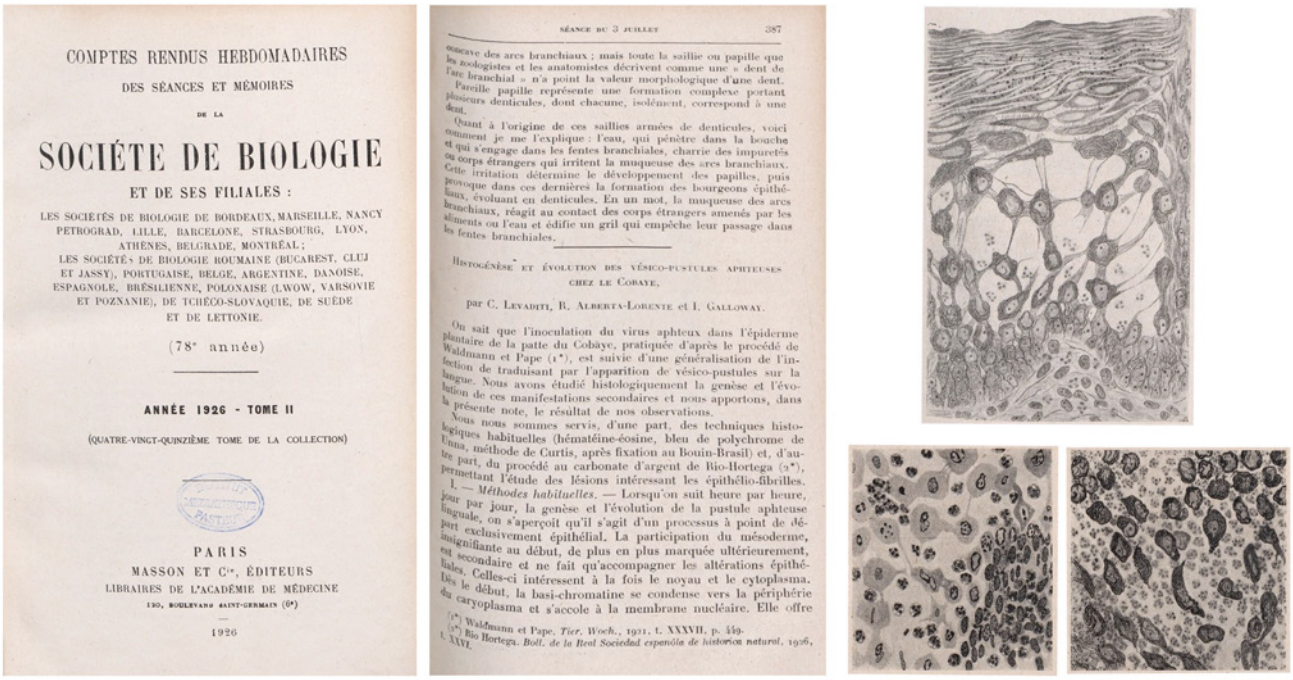
La fundación del Instituto Pasteur representa el triunfo del esfuerzo de un hombre entregado al culto de la Ciencia y de la Humanidad. Ya en el año 1870, Pasteur manifestó a Duclaux, el más íntimo de sus colaboradores, con quien estudió en Clermont el fenómeno de la fermentación alcohólica, su profundo deseo de dirigir un establecimiento dedicado a la ciencia y a la curación de las enfermedades, en el cual sus discípulos pudiesen encontrar toda clase de facilidades para el trabajo. Este deseo no había de realizarse antes del año 1888. En efecto, en el curso de este año, el 14 de noviembre, es cuando gracias a una suscripción internacional, debida a la iniciativa de la Academia de Ciencias, el presidente de la República, Sadi Carnot, inaugura el primer pabellón del Instituto Pasteur.

Los descubrimientos de Pasteur, relativos a la vacunación contra la rabia, habían producido una emoción intensa en el mundo entero. Así es que, entre los donantes, figuran nombres tales como los del Zar Alejandro III, Barón A. de Rothschild, Osiris, madame Boucicaut, etc. El Instituto Pasteur se desarrolla, pues, en un ambiente internacional; pero fundado poco tiempo después de la guerra de 1870 se inspira también en el culto de la patria. Las naciones y las instituciones extranjeras que contribuyeron a la fundación, manifestaron de este modo su afecto a nuestro país y su adhesión a la cultura y a la civilización francesas, realizando el bello pensamiento de Pasteur de que «la ciencia debe ser la más alta personificación de la patria.»

La primera suscripción alcanzó la cifra de 250.000 francos; pero la instalación del nuevo Instituto se hizo bien pronto insuficiente a causa de la afluencia de investigaciones, tanto franceses como extranjeros, sobre todo después de la resonante comunicación del Dr. Roux al Congreso de Budapest de 1894, sobre el

Figure 6. Issue 1 of the journal *Residencia* from 1926,[58] in which Levaditi and Romme published an article advertising the scientific activity of the Institut Pasteur, including pictures of its facilities.

Levaditi's laboratory, where Alberca worked, was the site of very fruitful activity at that time, as reflected by the number of studies published. For instance, with reference to *CRSSB* and the year 1928 only, Levaditi published up to 11 studies, six of which were conducted in collaboration with the two Spanish grant holders: five with Vicente Sanchís-Bayarri and one with Alberca. The latter was presented by Levaditi at the 21 January 1928 session of the Société de Biologie, and was later published in *CRSSB*, after Alberca's return to Madrid in July 1927.[63]



COMPTES RENDUS HEBDOMADAIRES

DES SÉANCES ET MÉMOIRES

DE LA

SOCIÉTÉ DE BIOLOGIE

ET DE SES FILIALES :

LES SOCIÉTÉS DE BIOLOGIE DE BORDEAUX, MARSEILLE, NANCY PETROGRAD, LILLE, BARCELONE, STRASBOURG, LYON, ATHÈNES, BELGRADE, MONTRÉAL ; LES SOCIÉTÉS DE BIOLOGIE ROUMAINE (BUCAREST, CLUJ ET JASSY), PORTUGAISE, BELGE, ARGENTINE, DANOISE, ESPAGNOLE, BRÉSILIENNE, POLONAISE (LWOW, VARSOVIE ET POZNANIE), DE TCHÉCO-SLOVAQUIE, DE SUÈDE ET DE LETTONIE.

(78e année)

ANNÉE 1926 - TOME II

(QUATRE-VINGT-QUINZIÈME TOME DE LA COLLECTION)

PARIS

MASSON ET Cie, ÉDITEURS

LIBRAIRES DE L'ACADÉMIE DE MÉDECINE

120, BOULEVARD SAINT-GERMAIN (6e)

1926

SÉANCE DU 3 JUILLET 387

concave des arcs branchiaux ; mais toute la saillie ou papille que les zoologistes et les anatomistes décrivent comme une « dent de l'arc branchial » n'a point la valeur morphologique d'une dent. Pareille papille représente une formation complexe portant plusieurs denticules, dont chacune, isolément, correspond à une dent.

Quant à l'origine de ces saillies armées de denticules, voici comment je me l'explique : l'eau, qui pénètre dans la bouche et qui s'engage dans les fentes branchiales, charrie des impuretés ou corps étrangers qui irritent la muqueuse des arcs branchiaux. Cette irritation détermine le développement des papilles, puis provoque dans ces dernières la formation des bourgeons épithéliaux, évoluant en denticules. En un mot, la muqueuse des arcs branchiaux, réagit au contact des corps étrangers amenés par les aliments ou l'eau et édifie un gril qui empêche leur passage dans les fentes branchiales.

HISTOGÉNÈSE ET ÉVOLUTION DES VÉSICO-PUSTULES APHTEUSES CHEZ LE COBAYE.

par C. Levaditi, R. Alberta-Lorente et I. Galloway.

On sait que l'inoculation du virus aphteux dans l'épiderme plantaire de la patte du Cobaye, pratiquée d'après le procédé de Waldmann et Pape (1*), est suivie d'une généralisation de l'infection de traduisant par l'apparition de vésico-pustules sur la langue. Nous avons étudié histologiquement la genèse et l'évolution de ces manifestations secondaires et nous apportons, dans la présente note, le résultat de nos observations.

Nous nous sommes servis, d'une part, des techniques histologiques habituelles (hématéine-éosine, bleu de polychrome de Unna, méthode de Curtis, après fixation au Bouin-Brasil) et, d'autre part, du procédé au carbonate d'argent de Rio-Hortega (2*), permettant l'étude des lésions intéressant les épithélio-fibrilles.

I. — *Méthodes habituelles.* — Lorsqu'on suit heure par heure, jour par jour, la genèse et l'évolution de la pustule aphteuse linguale, on s'aperçoit qu'il s'agit d'un processus à point de départ exclusivement épithélial. La participation du mésoderme, insignifiante au début, de plus en plus marquée ultérieurement, est secondaire et ne fait qu'accompagner les altérations épithéliales. Celles-ci intéressent à la fois le noyau et le cytoplasma. Dès le début, la basi-chromatine se condense vers la périphérie du caryoplasma et s'accole à la membrane nucléaire. Elle offre

(1*) Waldmann et Pape. *Tier. Woch.*, 1921, t. XXXVII, p. 449.
(2*) Rio Hortega. *Boll. de la Real Sociedad española de historia natural*, 1926, t. XXVI.

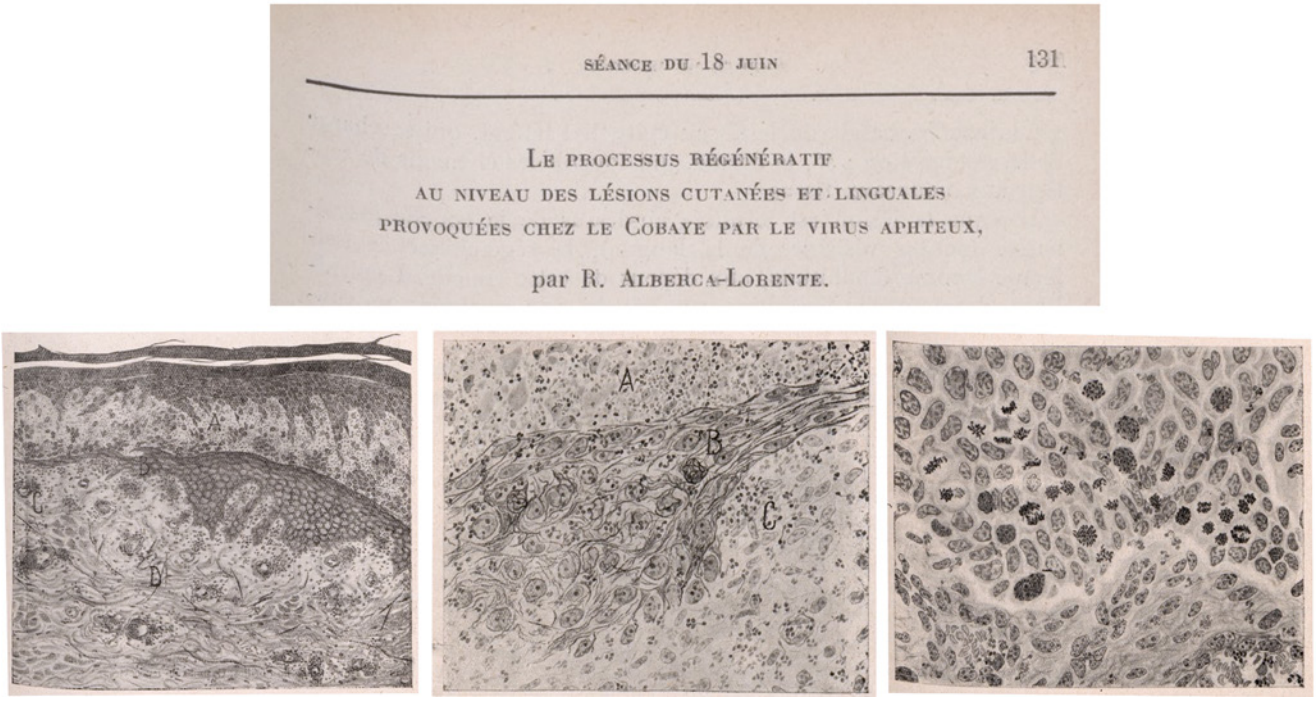
Figure 7. A publication in *CRSSB* from 1926,[61] which appeared several months after Alberca arrived at the Institut Pasteur. There, he used the silver carbonate technique to perform the histopathological study of tongue lesions caused by the aphthovirus.

The work published in 1928 by Levaditi and Alberca in *CRSSB* aimed to establish the histological basis of the concept of neuroprobasia (Figure 10).[64] This term (neuro- and probasia [from the Greek, walk forward]) had been introduced by Levaditi in 1926, in a monograph on herpes virus.[65] Neuroprobasia refers to the capacity of some neurotropic ultraviruses to propagate through nervous fibres. The publication was based on an experimental study conducted in rabbits, which received an injection of an emulsion of encephalitic brain tissue to the sciatic nerve; control animals were injected an emulsion of brain tissue without the infection. A more detailed histological analysis would be presented in Alberca's thesis, analysing lesions at different time intervals and at different levels of the sciatic nerve, in the pre-spinal ganglia, and in the spinal cord. Alberca's study documented and illustrated the progression of herpes infection, and presents a morphological basis supporting the concept of neuroprobasia described two years earlier by Levaditi.[65] This work in *CRSSB* is Alberca's last publication in France, coinciding with the end of his time at the Institut Pasteur.

Alberca's thesis

Five months after returning from Paris, Román Alberca presented his doctoral thesis, entitled "Histopathological study of experimental encephalitis," at the University of Madrid. The original version of the thesis is dated October 1927. However, it was not presented until 19 December. The thesis included a total of 199 typed sheets, in a landscape orientation, with 191 bibliographic references (Figure 9).[12]

It was rated as outstanding, and the records of its presentation are signed by the members of the evaluating committee, including the chairman, Eduardo García del Real (General Pathology - History of Medicine), and two spokesmen, Florencio Porpeta Lorente (Descriptive Anatomy and Embryology) and Jorge Francisco



SÉANCE DU 18 JUIN 131

LE PROCESSUS RÉGÉNÉRATIF
AU NIVEAU DES LÉSIONS CUTANÉES ET LINGUALES
PROVOQUÉES CHEZ LE COBAYE PAR LE VIRUS APHTEUX,

par R. ALBERCA-LORENTE.

Figure 8. A work by Alberca,[63] this time as the sole author, published in *CRSSB* in 1927, studying the regeneration of tongue and plantar lesions caused by the aphthovirus.

Tello Muñoz (Histology and Pathological Anatomy). A year later, the thesis was awarded the Nicolás Rodríguez y Abaytúa prize by the Royal Academy of Medicine,[35] worth 1500 pesetas.[66]

From the thesis, one can deduce that the experimental work had mainly been performed at the Institut Pasteur, although the microscopy work was clearly based on the techniques of the Spanish Histological School. Levaditi is the most frequently cited author in the bibliography, with 28 publications, followed by del Río-Hortega with 11 references, which are often quoted in the text.

The experimental work reported in Alberca's thesis was very extensive, both in the number of experimental animals used (51 rabbits) and the experimental routes and procedures used to induce encephalitis (injection to sciatic nerve, direct intracerebral injection after trepanation, or corneal scarification) using an emulsion of human brain pulp or the content of herpes vesicles as the vector.

To establish the location of brain lesions, Alberca used the method described three years earlier by McClellan and Goodpasture, using intravenous injections of trypan blue. He used intra-arterial formol for fixation in animals and systematically presented his microscopy findings from the cornea, neural pathway, and ganglia, as well as in the brain tissue itself.

The microscopy results show in detail the neuroglial changes and microglial involvement, as well as neuronal alterations, also analysing the significance of the so-called Lipschütz bodies. Supporting the findings of del Río-Hortega, Alberca highlighted the lack of neuronophagia, reporting the presence of perineuronal satellitosis, and discussing the possible oligodendroglial character in the interpretation of results.

Finally, Alberca studied the lesional topography of herpes infection, establishing a correlation with the inoculation pathway of the viral agent and with the temporal progression of lesions, with his interpretation once more

referring to the concept of neuroprobasia, which Alberca had previously published with Levaditi.[64]

Alberca's thesis was published several months after he presented it, in the journal *Progresos de la Clínica* in 1928.[16] Four years later, Alberca published the complete text of the thesis in the journal *Noticias Médicas de Murcia* in 1932.[67]

All the images in the thesis were also published in *Neuraxitis ectotropas* (Figure 11), the vast 432-page monograph, including 80 pages of bibliography, which Alberca published in 1943.[13] In this work, reviewed by Jiménez Díaz as requested by the author, Alberca performed a wide-ranging review of the literature on the numerous clinical symptoms associated with the pathological involvement of histological structures derived from the embryonic ectoderm. The work, published four years after the end of the Spanish Civil War, was certainly the most complete work published on the complex subject of encephalitis in Spain. This monograph was the last of Alberca's significant publications in which histopathological aspects represent a notable contribution to its contents.[64]

Alberca's difficulties achieving professional stability upon returning to Spain: the competitive examinations

After defending his thesis, Alberca became fully aware of the difficulties he was going to face to achieve stable employment that would enable him to continue with his research activity.

His Valencian student Enrique Amat recalled his master's pained travels across Madrid upon his return from Paris, in search of the famous monthly salary of five hundred pesetas to achieve his two main objectives: to continue his research career and, at the same time, to marry without financial troubles.[68]

The difficulties Alberca faced upon his return from Paris were neither new nor exclusive to him: many other students of del Río-Hortega also suffered them. Many of them had to sit competitive examinations to obtain university positions, or struggled to access one of the limited number of jobs at the existing hospitals. All this for the purpose of combining professional stability with their microscopy research, which they wished to continue.

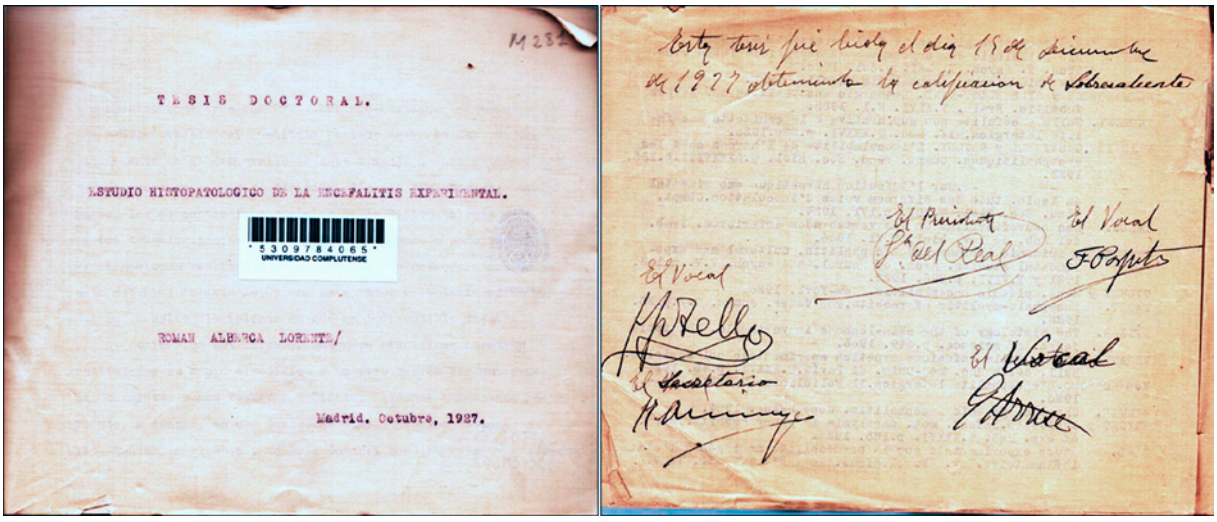
Some of del Río-Hortega's students managed to overcome the miserable employment situation of Spain at the time; however, others failed to do so. Of these, the most obvious example was probably Carlos Collado Aguirre, who after sitting several competitive examinations for university positions and rejecting an offer to work as a neuropathologist at a hospital in Boston,[11] ceased his research activity and became an insurance broker in Madrid.

The possibilities for paid work that could be combined with continued histological research were very restricted at the time. The options were limited to achieving a stable position as university professor, or obtaining one of the few available positions in the existing hospitals, where the role of the histologist/histopathologist would meet their purposes. The other alternative was to leave Spain definitively to continue their research abroad. These obstacles to continued research activity, as well as, from another perspective, the severe toll of the Spanish Civil War in the country, largely explain the great diversity of positions obtained by many of del Río-Hortega's students after their time at the laboratory of the Residencia.[6]

It has been reported that Alberca was offered the possibility to travel abroad to work with Levaditi, and even, during his student years, with Wilder Penfield.[1,16] The possibility of obtaining one of the few available university positions by competitive examination was in fact very challenging. In any case, and although this aspect of his life is not well known, Alberca also tried to explore this last, difficult option.

Having been awarded a grant by the JAE and obtained a certificate of proficiency, Alberca was eligible to sit the internal competitive examinations to appoint a university chair. In 1925, a call for candidates was published for the chair of Histology and Pathological Anatomy at the University of Granada[69]; this examination, which Alberca sat, is an example of how these selection procedures were run at the time.

The first call for the competitive examination in 1925 (open competition) was ultimately declared null and void. Another call was issued in 1926, now as an internal competition. The examination would later suffer several delays, due to, among other causes, the refusal of the Valencian Juan Bartual to sit on the examining board. As a consequence, two different calls were issued. In the first, opened in 1926, Pedro Ramón y Vinós (Cajal's nephew), Felipe Jiménez Asúa, Abelardo Mora Guarnido, Carlos Collado Aguirre, and José Muniesa

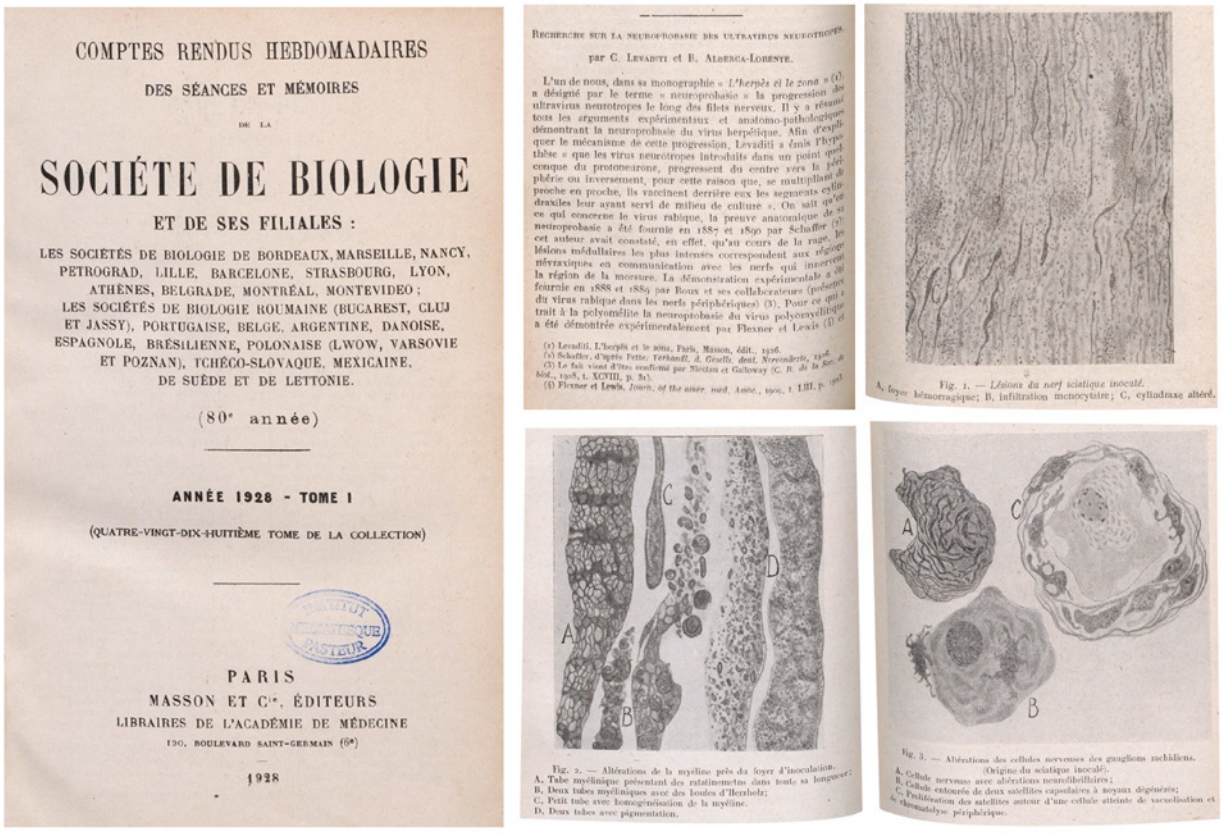

TESIS DOCTORAL.

ESTUDIO HISTOPATOLOGICO DE LA ENCEFALITIS EXPERIMENTAL.

ROMAN ALBERCA LORENTE/

Madrid. Octubre, 1927.

Figure 9. The original, typed document of Alberca's doctoral thesis, which he defended at Universidad Central on 19 December 1927. The evaluation report is signed by the professors in the committee. Among these, we can recognise the signatures of Eduardo García del Real, Francisco Tello, and Florencio Porpeta.[12]


COMPTES RENDUS HEBDOMADAIRES

DES SÉANCES ET MÉMOIRES

DE LA

SOCIÉTE DE BIOLOGIE

ET DE SES FILIALES :

LES SOCIÉTÉS DE BIOLOGIE DE BORDEAUX, MARSEILLE, NANCY, PETROGRAD, LILLE, BARCELONE, STRASBOURG, LYON, ATHÈNES, BELGRADE, MONTRÉAL, MONTEVIDEO ; LES SOCIÉTÉS DE BIOLOGIE ROUMAINE (BUCAREST, CLUJ ET JASSY), PORTUGAISE, BELGE, ARGENTINE, DANOISE, ESPAGNOLE, BRÉSILIENNE, POLONAISE (LWOW, VARSOVIE ET POZNAN), TCHÈCO-SLOVAQUE, MEXICAINE, DE SUÈDE ET DE LETTONIE.

(80e année)

ANNÉE 1928 - TOME I

(QUATRE-VINGT-DIX-HUITIÈME TOME DE LA COLLECTION)

PARIS

MASSON ET Cie, ÉDITEURS

LIBRAIRES DE L'ACADÉMIE DE MÉDECINE

120, BOULEVARD SAINT-GERMAIN (6e)

1928

RECHERCHE SUR LA NEUROPROBASIE DES ULTRAVIRUS NEUROTROPES.

par C. LEVADITI et R. ALBERCA-LORENTE.

L'un de nous, dans sa monographie « *L'herpès et le zona* » (1), a désigné par le terme « neuroprobasie » la progression des ultravirus neurotropes le long des filets nerveux. Il y a résumé tous les arguments expérimentaux et anatomo-pathologiques démontrant la neuroprobasie du virus herpétique. Afin d'expliquer le mécanisme de cette progression, Levaditi a émis l'hypothèse « que les virus neurotropes introduits dans un point quelconque du protoneurone, progressent du centre vers la périphérie ou inversement, pour cette raison que, se multipliant de proche en proche, ils vaccinent derrière eux les segments cylindraxiles leur ayant servi de milieu de culture ». On sait qu'en ce qui concerne le virus rabique, la preuve anatomique de sa neuroprobasie a été fournie en 1887 et 1890 par Schaffer (2) ; cet auteur avait constaté, en effet, qu'au cours de la rage, les lésions médullaires les plus intenses correspondent aux régions névraxiques en communication avec les nerfs qui innervent la région de la morsure. La démonstration expérimentale a été fournie en 1888 et 1889 par Roux et ses collaborateurs (propagation du virus rabique dans les nerfs périphériques) (3). Pour ce qui a trait à la polyomélite la neuroprobasie du virus polyomyélitique a été démontrée expérimentalement par Flexner et Lewis (4) et

(1) Levaditi. L'herpès et le zona. Paris, Masson, édit., 1926.
(2) Schaffer, d'après Fette. *Verhandl. d. Gesells. deut. Nervenärzte*, 1926.
(3) Le fait vient d'être confirmé par Nicolau et Galloway (*C. R. de la Soc. de biol.*, 1928, t. XCVIII, p. 81).
(4) Flexner et Lewis. *Journ. of the amer. med. Assoc.*, 1909, t. LII, p. 1639.

Fig. 1. — *Lésions du nerf sciatique inoculé.*
A, foyer hémorragique; B, infiltration monocytaire; C, cylindraxe altéré.

Fig. 2. — Altérations de la myéline près du foyer d'inoculation.
A, Tube myélinique présentant des ratatinements dans toute sa longueur; B, Deux tubes myéliniques avec des boules d'Herzheit; C, Petit tube avec homogénéisation de la myéline. D, Deux tubes avec pigmentation.

Fig. 3. — Altérations des cellules nerveuses des ganglions rachidiens. (Origine du sciatique inoculé).
A, Cellule nerveuse avec altérations neurofibillaires; B, Cellule entourée de deux satellites capsulaires à noyaux dégénérés; C, Prolifération des satellites autour d'une cellule atteinte de vacuolisation et de chromatolyse périphérique.

Figure 10. A publication by Levaditi and Alberca in *CRSSB* from 1927,[64] after Alberca's return to Spain. This is the last study he published in France as a result of his work at the Institut Pasteur. The thesis established the histological basis of the concept of neuroprobasia, described by Levaditi two years before.

Berenguer sat the examination. Jiménez Asúa, Collado Aguirre, and Muniesa Berenguer were direct students of del Río-Hortega.[6] Two years later, in March 1928, a second call was held, in which Román Alberca, Luis Urtubey (an indirect student of del Río-Hortega), and Luis Guilera Molas (who already sat five examinations to obtain a chair) participated.[69,70] The competitive examination was not held until April 1929, four years after the initial call for candidates. The examining board included del Río-Hortega and Negrín, who both voted for Urtubey, although the chair was finally awarded to Luis Guilera Molas. Alberca, who in 1929 had already obtained a position at the psychiatric hospital in Murcia, ultimately decided not to sit the examination.[69]

Alberca did not obtain a stable position as university lecturer until 1950,[3] after obtaining the chair of psychiatry in Salamanca by competitive examination, at the same time that Sarro obtained a chair in Barcelona.[4] Months later, after a contest for transfer, he obtained the recently created chair in Valencia,[2] becoming the first chair of psychiatry in the city. In a detailed study, Pacheco Yáñez et al.[4] report that Alberca entered all the competitive examinations held for a chair of psychiatry up to 1950. We have observed that Alberca's determination to obtain a stable position as a university professor also led him to sit a competitive examination for the chair of Legal Medicine in 1932,[71] as instruction in psychiatry was covered by this discipline prior to the creation of the first chair of psychiatry in 1933.

Let us now consider the circumstances in which Alberca obtained his position at the Murcia psychiatric hospital, an event that marked his definitive transition towards neuropsychiatric practice.

In the summer of 1928, the Provincial Charity published in the Official Gazette of the Province of Murcia a call for candidates for the position of chief clinician at the provincial psychiatric hospital, with an annual salary of 6000 pesetas.[72] It is unclear how Alberca became aware of this competition, but it is very likely that his master Sanchís Banús would have informed him. The salary offered in the call for candidates covered the monthly 500 pesetas that Alberca yearned for, as reported by Amat Aguirre.[68]

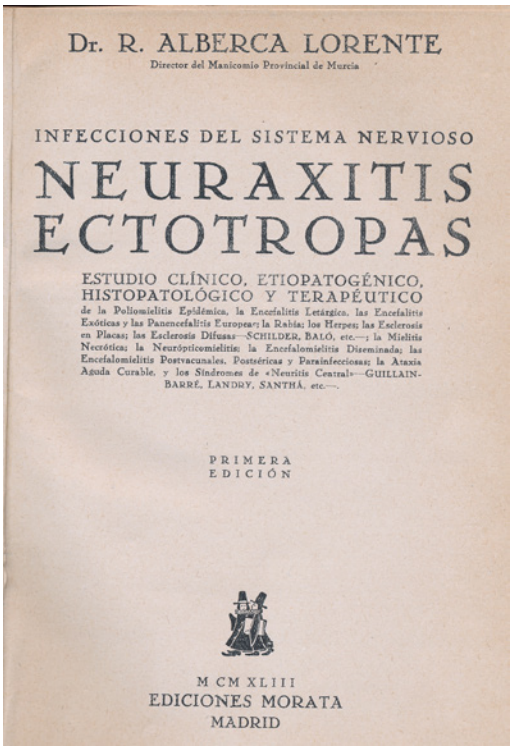
The examination was held in Madrid, and included 5 different exercises; the examining board was chaired by José Ibáñez Martín, president of the provincial government of Murcia, who became Minister of Education after the Spanish Civil War. The other members of the examining board were José Sanchís Banús, Jaime Esquerdo, Etellaz, and Salvador Pascual.[72] The candidates were Román Alberca, Luis Valenciano Gayá, and Raimundo Muñoz Sánchez, the latter two from Murcia. Alberca obtained the maximum score and won the chair. In the examination, Luis Valenciano, a recently graduate and student of Rodríguez Lafora, obtained the second highest score[73,74]; years later, he and the third candidate would work alongside Alberca at the Psychiatric Hospital.

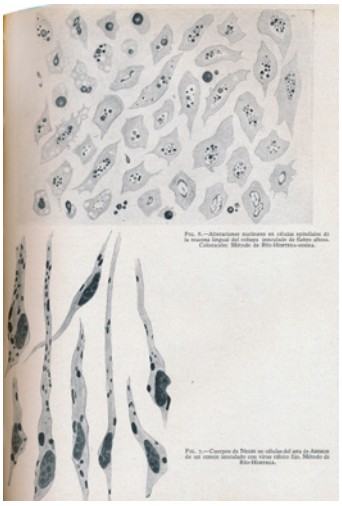
Thanks to his move to the city of Murcia, Alberca stabilised his financial situation and was able to marry in 1929.[1] His new healthcare activity necessarily required him to dedicate his time exclusively to clinical care and to renounce his brilliant career in microscopy research. This renunciation is reported by Alberca's son,[75] who recounted how his father adopted the idea that a man is often defined by what he gives up rather than what he achieves. To this, he added that his father, thanks to his psychiatric healthcare activity in Murcia, managed to understand how every abdication entails an implicit triumph.

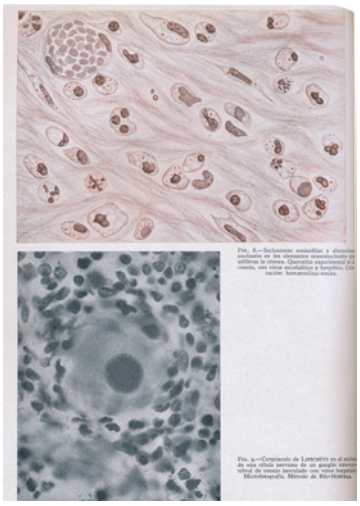
In this way, Alberca transitioned from histopathological research to neuropsychiatric clinical practice. This transition was not an isolated phenomenon among the members of the Spanish Histological School. This is explained by the process of legitimation of psychiatry as a medical specialty in Spain during the 1920s. This occurred thanks to the interest of a generation of young doctors, many of whom, like Alberca, had been trained in the laboratory medicine tradition, whose maximum representative was the Spanish Histological School.

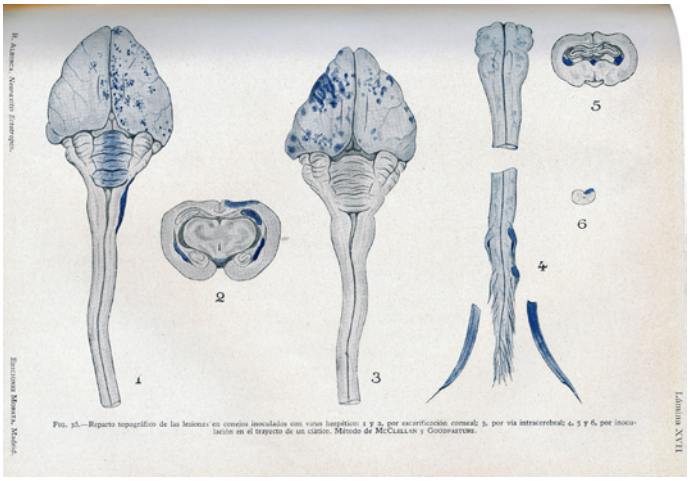
Many of these young physicians, some of them still students, attended the laboratories of master histologists, attracted by the prestige of the Spanish Histological School. These masters of histology, even more than today, could offer only their teachings and perhaps their support in obtaining a grant, though the financial allocation was inevitably limited. This led many of their students, facing financial hardship, to try to specialise in order to improve the meagre income from pure research. In this scenario, and in the context of a clear inclination for anatomoclinical methods, first neurology and subsequently neuropsychiatry were frequently chosen by these young researchers.

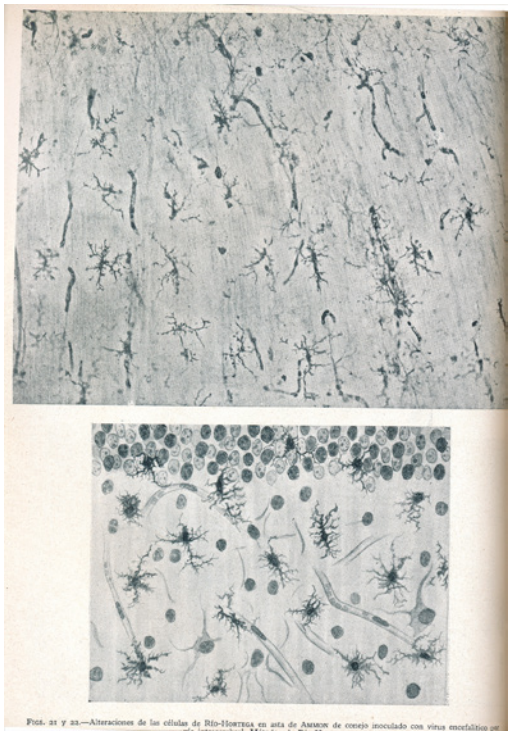
Therefore, there is a long list of medical figures who transitioned from research at del Río-Hortega's laboratory

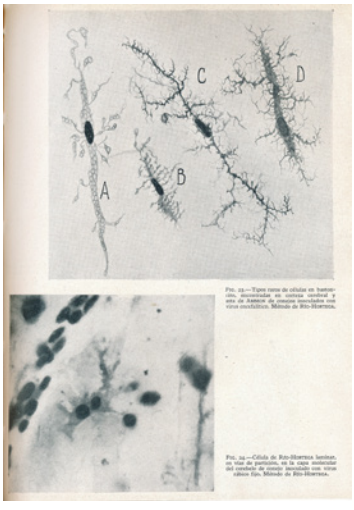












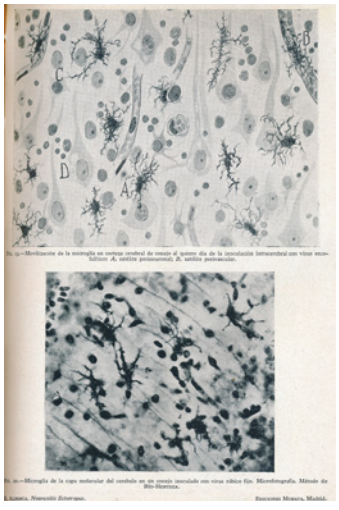


Figure 11. Images from the vast monograph published in 1943 by Alberca on infections of the nervous system.[13] Upon request by the author, the text was reviewed by Carlos Jiménez Díaz. The monograph includes reproductions of numerous illustrations from Alberca's previous microscopy studies, as well as images from his own doctoral thesis.

to clinical practice in neurology and psychiatry. Like Alberca, many had been direct students of del Río-Hortega, and had received neuropsychiatric training at the Hospital General with Sanchís Banús. For instance, we should remember the figures of José María Aldama Truchuelo, Dionisio Nieto Gómez, and Antonio Abaúnza Fernández; the latter two took exile in Mexico after the Spanish Civil War.

We previously mentioned the scientific figure of Miguel Prados Such (1894-1969), who was a collaborator of del Río-Hortega at the histopathology laboratory and had studied under Rodríguez Lafora. Like Alberca, Miguel Prados directed a psychiatric hospital, in Málaga, and took exile after the Spanish Civil War, becoming a psychiatry lecturer at McGill University in Montreal.

Therefore, the nascent psychiatric specialty was enriched with a generation of young researchers with a solid neurohistological background, whose immediate predecessor was what Diego Gracia Guillén called the "Generation of the *Archivos de Neurobiología*."[76] This name refers to a group of professionals (Sacristán, Rodríguez Lafora, Sanchís Banús, Villaverde, Prados Such, etc) who in the 1920s, with training and working methods that were superior to those of their predecessors, tried to establish for the first time in Spain a rigorous, professional, scientific psychiatry, comparable to the best European psychiatry of the day. These high standards were also brilliantly achieved by Alberca, both at the clinical level, at the Murcia psychiatric hospital, and as an instructor, at the University of Valencia. However, as mentioned at the beginning of this article, detailed analysis of this is beyond the scope of the present study.

Discussion

This article demonstrates the relevance of Román Alberca's microscopy work during his training, under the direction of Pío del Río-Hortega and Constantin Levaditi. This research was the subject of many of Alberca's publications that are reviewed here. They frequently not only describe morphological aspects of the subjects he addressed, but also provide relevant morphofunctional interpretations. These publications reflect Alberca's perfect mastery of the microscopy techniques of the Spanish Histological School, and their applicability to neuropathological analysis.

This research activity, which he started at only 18 years of age, was interrupted in 1928 due to the difficulties he faced in achieving professional stability in the clinical and university settings. However, his neurohistological training would be an excellent starting point, and permanently marked his brilliant subsequent neuropsychiatric work in Murcia and Valencia, where he was the first chair of psychiatry.

Conflicts of interest and funding

The author has no conflicts of interest to declare. No public, commercial, or private funding was received for the drafting of this article.

References

1. Sáez Gómez JM, Marín Fernández JL, Cerón González C. Román Alberca Lorente (Alcázar de San Juan,1903 – Murcia, 1967). In: Marset Campos P, coord. Médicos murcianos de la Escuela Histológica Española. Murcia (ES): Servicio de publicaciones de la Universidad de Murcia; 2008. p. 141-70.
2. Orden ministerial de 14 de junio de 1950 por la que se dota la cátedra de Psiquiatría de la Facultad de Medicina de la Universidad de Valencia. Boletín Oficial del Estado. 5 Aug 1950. 217:3440.
3. Orden de 23 de octubre de 1950 por la que se nombra Catedrático de la Universidad de Valencia a don Román Alberca Lorente. Boletín Oficial del Estado. 28 Oct 1950. 301:5030.
4. Pacheco Yáñez L, Martínez Azumendi O, Hernández Merino A. Román Alberca Lorente: catedrático de Psiquiatría en 1950. Neurosci Hist. 2021;9:128-34.
5. Orden de 26 de noviembre de 1964 por la que se crea en la Facultad de Medicina de la Universidad de Valencia una Escuela Profesional de Psiquiatría. Boletín Oficial del Estado. 5 Jan 1965. 4:217-8.
6. Vera Sempere F. La producción científica de Pío del Río Hortega y el laboratorio de la Residencia de Estudiantes. Neurosci Hist. 2022;10:126-44.
7. Junta de Ampliación de Estudios e Investigaciones Científicas. Memoria correspondiente a los cursos 1922-23 y 1923-4. Madrid: [s.n.]; 1925. p. 252.
8. Junta de Ampliación de Estudios e Investigaciones Científicas. Memoria correspondiente a los cursos 1928-29 y 1929-30. Madrid: [s.n.]; 1930. p. 254.
9. Real Orden por la que se concede a Ramón Alberca Lorente una pensión para estudiar en Francia e Inglaterra la histopatología de las enfermedades mentales y especialmente de la esquizofrenia. Gaceta de Madrid. 25 Feb 1926. 56:1047-8.

10. Memorias de la Junta para Ampliación de Estudios e Investigaciones Científicas. (accessed: 9 Jun 2022). Available from: http://edaddeplata.org/tierrafirme_jae/memoriasJAE/index.html
11. Museo Archivo Histórico de la Sociedad Española de Neurología. Archivo Pío del Río-Hortega. (accessed: 13 Sep 2022). Available from: https://archivoprh.sen.es/
12. Alberca Lorente R. Estudio histopatológico de la encefalitis experimental [doctoral thesis]. Madrid: Universidad Complutense (Central) de Madrid; 1927. Signature M-281.
13. Alberca R. Neuraxitis ectotropas. Estudio clínico, etiopatogénico, histopatológico y terapéutico. Madrid: Ediciones Morata; 1943.
14. Vera Sempere FJ. Los Anuarios de la Facultad de Medicina 1948-1964 y la figura del Prof. Juan José Barcia Goyanes. An R Acad Med Comunitat Valenciana. 2013;14:1-14.
15. Roderic (Repositorio institucional de la Universitat de Valencia). Anuarios de la Facultad de Medicina de Valencia 1946-1964. (accessed: 9 Jun 2022). Available from: https://roderic.uv.es/handle/10550/25172
16. Fernández Villalba E. Herrero Ezquerro MT. Vida y obra del profesor Dr. D. Román Albera. Neurosci Hist. 2021;9:93-118.
17. Hernández Merino A. Martínez Azumendi L, Pacheco Yáñez L. Los grafitis del manicomio de Murcia. Román Alberca Lorente y Gonzalo Rodríguez Lafora. Neurosci Hist. 2021;9:119-27.
18. Vara Thorbeck RD. Pío del Río Hortega y Vara López. Arbor. 2005;181:199-201.
19. Aguirre de Viani C, Jiménez Carmena JJ. Pío del Río Hortega. León (ES): Junta de Castilla y León; 1991.
20. Alberca R. Sobre la naturaleza y significación de los filamentos epidérmicos de Erxheimer. Bol R Soc Esp Hist Nat. 1921;21:449-59.
21. Alberca R. Sobre la naturaleza y significación de los filamentos epidérmicos de Erxheimer. Trabajos del Laboratorio de Histopatología. 1921:20.
22. Río Hortega P. Contribución al conocimiento de las epiteliofibrillas. Trab Lab Invest Biol Univ. 1917;15:201-99.
23. Corral I. Corral C. Pío del Río-Hortega. Un corazón artístico. Neurosci Hist. 2014;2:127-8.
24. De Felipe Oroquieta J. El jardín de la neurología. Sobre lo bello, el arte y el cerebro. Madrid; CSIC; 2014.
25. Favre M. Signification morphologique et fonctionalle des filaments spirales de l'epiderme. C R Seances Soc Biol Fil.1920;83:351-2.
26. Ramón y Cajal, S. Manual de Histología Normal y de técnica micrográfica para uso de estudiantes. 7th ed. Madrid: Imprenta y librería de Nicolás Moya; 1921.
27. Río Hortega P. Manera sencilla de teñir epiteliofibrillas y ciertos retículos protoplásmicos de difícil demostración. Bol Soc Esp Biol. 1926;26:107-13.
28. Cowdry EV, ed. General cytology. A textbook of cellular structure and function for students of biology and medicine. Chicago: The University of Chicago Press; 1924.
29. Selby CC. An electron microscope study of the epidermis of mammalian skin in thin sections. I. Dermo-epidermal junction and basal cell layer. J Biophys Biochem Cytol. 1955;1:429-44.
30. Lista de socios de la Real Sociedad Española de Historia Natural. Bol R Soc Esp Hist Nat. 1922;22:10.
31. Río Hortega P. Sobre la existencia de filamentos especiales en el interior de las células hepáticas (datos para el conocimiento de la fibrinogenesis). Bol R Soc Esp Hist Nat. 1921;21:438-49.
32. Río Hortega P. Sobre las granulaciones argentófilas y otras estructuras de las células renales (datos para el estudio de las secreciones del riñón). Bol R Soc Esp Hist Nat. 1921;21:459-71.
33. Jiménez Asúa F. Células cianófilas y células cebadas: Plasmazellen y Mastzellen. Bol R Soc Esp Hist Nat.1922;22:11521.
34. Alberca R. Algunas observaciones favorables al origen monocelular de los corpúsculos gigantes. Trabajos del laboratorio de Histopatología. 1923;29:1-5.
35. López-Ibor Aliño JJ. Biografía de Román Alberca Lorente. Real Academia de la Historia. (accessed: 13 Jun 2022). Available from: https://dbe.rah.es/biografias/28612/roman-alberca-lorente
36. Río Hortega P, Jiménez Asúa F. La fagocitosis en los tumores y en otros procesos patológicos. Arch Card Hemat. 1921;2:161-220.
37. Alberca R. Contribución al conocimiento histopatológico de la elefantiasis nostras. Trabajos del Laboratorio de Histopatología. 1923;31.
38. Alberca R. Contribución al conocimiento histopatológico de la elefantiasis nostras. Los progresos de la Clínica. 1923;26:491-510.
39. Costero I. Crónica de una vocación. Ciudad de México: Editores Asociados SA; 1977.
40. Alberca R. Contribution à la connaissance histopathologique de l'éléphantiasis nostras. C R Seances Soc Biol Fil. 1924;91:813-5.
41. Río Hortega P. La glie à radiations peu nombreuses et la cellule de Schwann sont- elles homologables? C R Seances Soc Biol Fil. 1924;91:818-20.
42. Río Hortega P. Sur la configuration et la structure des néphrocytes dans les divers segments du tube urinifère. C R Seances Soc Biol Fil. 1924;91:831-3.
43. Alberca R. Intervención precoz de la microglía en las heridas experimentales de la médula del conejo. Bol Soc Esp Biol. 1926;11:81-8.

44. Alberca R. Intervención precoz de la microglía en las heridas experimentales de la médula del conejo. Arch Med Cir Espec. 1925;19:97-104.
45. Sanchís Banús J. Alberca R. Sobre la locura inducida. Arch Med Cir Espec. 1925;18:97-113.
46. Pérez Salmón C. La obra psicológica de José Sanchis Banús (1893-1932) [doctoral thesis]. Madrid: Facultad de Psicología, Universidad Complutense de Madrid; 2004.
47. Plumed Domingo JJ, Rojo Moreno LM. El tratamiento de las psicosis funcionales en España a principios del siglo XX (1917-1931). Actas Esp Psiquiatr. 2010;38:163-9.
48. González Páez S. Tratamiento de la esquizofrenia por el método de Carroll con presentación de herpes labialis. Arch Med Cir Espec.1924;16:523-53.
49. Espino Delfín C. Contribución al estudio de la barrera ectomesodermica del sistema nervioso central en algunos procesos morbosos, especialmente en la esquizofrenia. An Med (Lima). 1927;13:1-38, 85-96, 133-4.
50. Río Hortega P. El tercer elemento de los centros nerviosos. Bol Soc Esp Biol. 1919;9:68-82, 91-103, 108-20, 154-66.
51. Metz A. Spatz H. Die Hortegaschen Zellen (= das sogenannte „dritte Element") und über ihre funktionelle Bedeutung). Z f d g Neur u Psych. 1924;89:138-70.
52. Junta de Ampliación de Estudios e Investigaciones Científicas. Memoria de la Junta de Ampliación de Estudios e Investigaciones Científicas correspondiente a los cursos 1924-5 y 1925-6. Madrid: [s.n.]; 1927. p. 128, 327-8.
53. García Díaz C. Miguel Prados Such: un psiquiatra reformista en el exilio (Málaga, 1894-Montreal, 1969). Transatlantic Studies Network. 2021;11:217-30.
54. Mott FW, Prados Such M. Further pathological studies in dementia praecox especially in relation to the interstitial cells of Leydig. Proc R Soc Med. 1922;15:1-14.
55. Prados Such M. The morbid histology of the testes in dementia præcox. Proc R Soc Med. 1922;15:14-30.
56. Prados Such M. Anatomía patológica de las esquizofrenias. Arch Med Cir Espec. 1925;18:392-409.
57. Junta de Ampliación de Estudios e Investigaciones Científicas. Memoria de la Junta de Ampliación de Estudios e Investigaciones Científicas correspondiente a los cursos 1926-28. Madrid: [s.l.]; 1929. p. 15-6.
58. Conferencias del profesor Levaditi. Diario el Sol. 20 Apr 1925. p. 4.
59. Levaditi C, Romme M. El Institut Pasteur, de París, y sus filiales. Residencia. 1926;1:18-22.
60. Kalantzis G, Skiadas P, Lascaratos J. Constantin Levaditi (1874–1953): a pioneer in immunology and virology. J Med Biogr. 2006;14:178-82.
61. Levaditi C, Alberca R, Galloway I. Histogénèse et évolution des vésico-pustules aphteuses chez le cobaye. C R Seances Soc Biol Fil. 1926;97:387-90.
62. Dr. I. A. Galloway. Obituary. Nature. 1970;225:978-9.
63. Sáez Gómez JM, Marset Campos P, Aguinaga Ontoso E, López Fernández C. Las dificultades para la investigación científica en la España de la primera mitad del siglo XX. El caso paradigmático de un psiquiatra de prestigio: Román Alberca Lorente (Alcázar de San Juan, 1903 – Murcia, 1967). In: Lorda SD, Gómez Rodríguez C, Cibeira Vázquez A, Villasante O, eds. Razón, locura y sociedad. Una mirada a la historia desde el siglo XXI. Madrid: Asociación Española de Neuropsiquiatría; 2013. p. 247-54.
64. Levaditi C, Alberca-Lorente R. Recherche sur la neuroprobasia des ultravirus neurotopes. C R Seances Soc Biol Fil. 1928;98:186-91.
65. Levaditi C. L'herpes et la zona: "ectodermoses neurotropes", étude étiologique et pathogénique. Paris; Masson: 1926.
66. Real Academia Nacional de Medicina, premios, socorros y recompensas a adjudicar en la sesión inaugural de 1929. Gaceta de Madrid. 27 Jan 1929. p. 820-1.
67. Alberca Lorente R. Estudio histopatológico de la encefalitis experimental. Noticias Médicas (Murcia). 1932;7:1-48.
68. Amat Aguirre E. Relaciones de la neurología y la psiquiatría. In: Román Alberca Lorente: su persona y su obra. Sesión homenaje. Actas de IX Congreso Nacional de Neuropsiquiatría; 1967, septiembre 27-30. Murcia (ES): Asociación Española de Neuropsiquiatría; 1968.
69. González Santander R. La escuela histológica española: III- Oposiciones a cátedras de Histología y Anatomía Patológica. Curriculum académico y científico de sus catedráticos (1873-1950). Alcalá de Henares (ES): Servicio de Publicaciones, Universidad de Alcalá; 1998. p. 40-1.
70. Oposiciones, turno de auxiliares a la cátedra de Histología e Histoquimia normales y Anatomía Patológica, vacante en la facultad de Medicina de la Universidad de Granada. Gaceta de Madrid, 11 Jun 1928. 163:1446.
71. Oposiciones, turno libre, a las cátedras de Medicina Legal de Cádiz y Salamanca, convocadas por orden de 17 de febrero del año actual. Gaceta de Madrid, 7 Jun 1932. 159:1747-8.

72. Plaza a oposición: Jefe Clínico del manicomio provincial de Murcia. Noticias Médicas (Murcia). 1928;3:47.
73. Rahmani R, Medrano J, Pacheco L. Clásicos de la psiquiatría: Luis Valenciano Gayá. Lmentala Boletín RSMB. 2018;20:1-14.
74. Cerón González C. Luis Valenciano, psiquiatra. Murcia (ES): Servicio de Publicaciones, Universidad de Murcia; 1996.
75. Alberca Serrano R. Las investigaciones histopatológicas. In: Román Alberca Lorente: su persona y su obra. Sesión homenaje. Actas de IX Congreso Nacional de Neuropsiquiatría; 1967, septiembre 27-30. Murcia (ES): Asociación Española de Neuropsiquiatría; 1968.
76. Gracia Guillén D. Medio siglo de psiquiatría española: 1885-1936. Cuad Hist Med Esp. 1971;10:305-39.