

Bruno Benedetto Rossi

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When he was expelled from the Università di Padova in 1938, the professor of experimental physics from the Arcetri school was 33 years old, with an extraordinary international reputation and contacts and experiments abroad, and had just married. With his young wife Nora Lombroso, he emigrated at once: first to Copenhagen, then to Manchester, and in June 1939 to the United States, where their children were born. America, from the outset, was his goal. Correspondence with New York and London reveals from September 1938 almost a competition to be able to have «one of the giants» of physics in the 20th century, whom fascism was hounding for the so-called defence of the race. He was reappointed at the Università di Palermo in 1974, at the age of 70, when he was by then retired from MIT.

Education

Bruno was the eldest of three sons of Rino Rossi (1876-1927), an engineer who worked on the electrification of Venice, and of Lina Minerbi, from Ferrara (1868-1967). After attending the Marco Polo high school in Venice, he enrolled at the Università di Padova, and then at Bologna, where he graduated on 28 December 1927,¹ defending a thesis in experimental physics on imperfect contacts between metals. His supervisor was Quirino Majorana (1871-1957), uncle of the later famous Ettore, who was currently head of the faculty and director of the institute of physics, and was from 1925 to 1947 president of the Società italiana di fisica. The professors whose lectures Rossi recalled as most interesting, however, were mathematicians. What

¹ See ASUBo, *Student archives*, f. 6996, «Rossi Bruno». The degree was in physical and mathematical sciences (the thesis is missing). On the thesis («Imperfect Contacts Between Metals») and the professors he recalls, see the copy of the CV presented at the end of 1938, BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, curriculum vitae, undated, but November 1938.

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persuaded him into physics was the hours spent in the well equipped laboratory at Bologna with two other students, one male, one female, and the arrival at Bologna of professor Rita Brunetti, already assistant for several years at the Università di Firenze².

The Arcetri Group in Florence

It was Rita Brunetti who introduced him to the Arcetri Group³. And so on 1 March 1928, when he was not yet 23, Rossi became assistant at the Istituto di Fisica in the Università di Firenze, directed by Antonio Garbasso, who as the mayor received him for the first time at the Palazzo Vecchio⁴. The year after he became a tenured assistant after competitive examination; from 1 November 1930 he appears to have been acting *aiuto* (adjunct professor); with the granting of the *libera docenza* (qualification to teach at the University) in experimental physics on 15 December 1930 he began to teach theoretical physics as a tenured lecturer; in May 1931 he achieved success in the competition for *aiuto*, renewed annually. For five years he worked with other young people, brilliant physicists: Gilberto Bernardini, Daria Bocciarelli, Beatrice Crinò and her future husband Guglielmo Righini, Lorenzo Emo Capodilista, Sergio De Benedetti and Giuseppe Occhialini, Enrico Persico e Giulio Racah: a group which in the course of a few years would be dispersed, like that in Rome in via Panisperna⁵.

² See Bruno Rossi, *Moments in the Life of a Scientist*, Cambridge, Cambridge University Press, 1990, p. 3. (Ital. ed. 1987). Information on the thesis supervisor in Giorgio Dragoni, *Majorana Quirino*, in *Dizionario Biografico degli Italiani*, Roma, Istituto della Enciclopedia Italiana (hereafter *DBI*), 67, 2006 <<http://www.treccani.it>> (accessed 10 June 2020).

³ B. Rossi, *Moments in the Life*, cit., p. 3, and the whole chapter 1 dedicated to Arcetri. See Roberto Casalbuoni, Daniele Dominici, Massimo Mazzoni, Giuseppe Pelosi (eds.), *La fisica ad Arcetri: dalla nascita della regia università alle leggi razziali*, Firenze, FUP, 2016. The list of graduates from 1926-27 to 1939-40 is reconstructed in Alberto Bonetti, Massimo Mazzoni, Giuseppe Occhialini, *L'Università degli studi di Firenze nel centenario della nascita di Giuseppe Occhialini (1907-1993)*, Florence, FUP, 2007, p. 63.

⁴ B. Rossi, *Moments in the Life*, cit., p. 4. The appointment from 1 March was ratified by a rectoral order of the Università di Firenze of 15 April 1928; for this and the exact dates of his career progress later in the text, see ASUFi, *Stati di servizio*, f. «Rossi Bruno B.».

⁵ See Simone Turchetti, *Tracce e transiti. Vite ed esperienze di studio dei fisici di Firenze durante e dopo il fascismo*, in Patrizia Guarnieri (ed.), *L'emigrazione intellettuale dall'Italia fascista. Studenti*

At the Arcetri Institute, Rossi directed his attention to cosmic rays: that recent discovery revealed like a flash of light the existence of a world full of mysteries that no-one had yet explored. He invented the electronic coincidence circuit, which made it possible to detect particles crossing two Geiger tubes in a very short time, thus allowing their tracks to be reconstructed. What was decisive for this was his first experience of research abroad, from May to September 1930 at the Physikalische-Technische Reichsanstalt in Berlin led by Walter Bothe: it was the «heart of modern physics» where everyone passed, from Albert Einstein to Max Planck. Rossi had made connections with Werner Heisenberg, and in Italy he became ever closer to Enrico Fermi, who assigned him the opening lecture at the international conference on nuclear physics in Rome on 11 October 1931⁶.

In Padua: successes and difficulties

In 1932 he was placed second in the list of winners in the competitive examination for the free Università di Ferrara; first was Orazio Specchia (who would go to Catania) and third was Valle: «a compromise shortlist of three which does not sparkle for an excess of logic», admitted Enrico Fermi, who complained about the exclusion of Emilio Segrè. To get Rossi included at least he «had had to conduct a relentless battle for two days against the majority» of the committee of which he was part, which wished to consider solely criteria of seniority as opposed to those of science⁷.

The summons to Padua arrived while Rossi was in Paris on a fellowship from the Accademia d'Italia, chaired at that period by Guglielmo Marconi⁸. On 30

e studiosi ebrei dell'università di Firenze in fuga all'estero, Florence, FUP, 2019, pp. 57-72.

⁶ B. Rossi, *Moments in the Life*, cit., pp. 15-17. The period of the foreign study grant in ASUFI, *Stati di servizio*, f. «Rossi Bruno B.».

⁷ Letter from Enrico Fermi to Bruno Rossi, undated, in Centro Internazionale di storia dello spazio e del tempo, Brugine, Padua, reproduced by Mario Quaranta, in «L'Indice dei libri del mese», 24, 6, 2007, p. 26. The source has proved inaccessible.

⁸ As related by Rossi in *Moments in the Life*, cit., p. 40. On this there is no confirmation in his service record. His personal file was declared missing because of the floods in Florence in 1966, see ASUFI, *Stati di servizio*, f. «Rossi Bruno B.», letter from the Università di Firenze to the Università di Palermo, 16 April 1980, in which his periods of service are listed only by year, in

November 1932 he received the appointment to *professore straordinario* (before the tenure) in experimental physics, and simultaneously to director of the institute of physics and the attached geodynamic observatory; on 30 January 1933 he ceased working at Florence⁹.

Followed to Padua by his students Sergio De Benedetti and Eugenio Curiel, he made two important discoveries. The first was the so-called East-West effect: because of interaction with the earth's magnetic field, if cosmic rays are mostly positively charged (and they are, protons being the dominant component) they originate more frequently from the west than from the east. Since this effect is more obvious near the equator, taking De Benedetti (Curiel, however, declined) and Ivo Ranzi, professor of meteorology at Bologna (who would become noted for his antisemitism), he went at the end of August 1933 on a mission to Asmara in Eritrea, then an Italian colony. The second was the discovery of cosmic ray showers, made in Padua and Asmara that same year. Every so often, particle detectors on the ground are struck by very extensive showers of particles, which cause matching signals on counters placed a great distance from each other: this effect can be explained by multiple interactions of cosmic rays with the atmosphere. Furthermore, Rossi devised a novel electromagnet for the study of cosmic rays, which would be used in the laboratory of the Università di Padova under mount Marmolada¹⁰.

The mission to Eritrea had been entrusted to him by the CNR, under the commission of the president, Guglielmo Marconi. Despite its scientific

response to the request for the file from the Università di Palermo, 19 March 1980.

⁹ See Archivio storico dell'Università di Palermo, hereafter ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno»; Rossi's reply to the ministry of national education (hereafter MEN), Firenze, 15 December 1932, to the notification of the appointment dated 10 December; DM 30 November 1932. This file stops at 1941, because it originates from the Università di Padova at the request of the Università di Palermo for the events which will be described below. The - not easy - tracing of this file and other non-inventoried documentation concerning Rossi at the Università di Palermo is due to Daniela Lo Brutto, whom I thank very much. The date of the end of service at Florence is in ASUFI, *Stati di servizio*, f. «Rossi Bruno B.».

¹⁰ See Alessandro De Angelis, *L'enigma dei raggi cosmici. Le più grandi energie dell'universo*, Milan, Springer, 2012. 2011, especially pp. 52-57.

success, this raised a series of reprimands from the ministry of national education that they had not been informed in advance, which was followed by the self-justification from the rector of Padua and even the ministry for the Colonies, who justified themselves by saying that the professor «had not gone abroad but only to the colony of Eritrea»¹¹. On 14 August no less a person than senator Guglielmo Marconi intervened to put an end to the regrettable affair: it appeared that Rossi was entirely in order with his authorisations; from now on, however, they would always give timely notice of any mission abroad or to the colonies

Doing research in Italy was not easy.

«Dismissed from his post»

Rossi had been promoted to full professor on 22 April 1936, backdated to 1 December 1935. In its very good assessment, the examining committee, chaired by his former professor Quirino Majorana, mentioned also the planning role in the construction of the new institute of physics at Padua, inaugurated later in 1937 and still the site of the University's department of physics and astronomy¹².

In the summer of 1937, at the Venice Lido, Bruno had often met Nora, the daughter of the well-known physiologist Ugo Lombroso and granddaughter of the very famous anthropologist, Cesare Lombroso. He had seen her first at the wedding of one of her cousins¹³. They married in April 1938.

¹¹ ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», Ministry of the Colonies to the Ministry of National Education, Rome 17 April 1934 and all the correspondence between the CNR, the rector's office in Padua and the two cited ministries from 22 March to August 1934.

¹² Massachusetts Institute of Technology, Libraries. Department of Distinctive Collections, *Bruno Benedetto Rossi papers*, MC-0166, b. 3, «Il Nuovo Istituto di Fisica della R. Università di Padova», manuscript, undated <<https://archivesspace.mit.edu>> (accessed 24 May 2020). See also the photo of the Institute of Padua here in the gallery. In ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», MEN, service record for promotion, the corresponding decision, and the report of the assessment committee, 16 April 1936, which comprised Quirino Maiorana of the Università di Bologna, Adolfo Campetti from Pavia and Giovanni Polvani from Milano, later published in MEN, «Bollettino Ufficiale», part. II, 15, 34, 26 August 1937.

¹³ B. Rossi, *Moments in the Life*, cit., p. 39, longer in the English edition.

His young wife was openly anti-fascist, as was her family. He in contrast felt no interest in politics; he had taken the fascist oath late, only a few months after arriving in Padua on 21 March 1933¹⁴. Among his better students, Ettore Pancini, after graduating under him in 1938 then became Achille, commander of the Gruppi di azione partigiana (GAP) in Venice, and the restless Eugenio Curiel, who graduated at Florence and became a professor at Padua, ended up in confinement, and was murdered in 1945 by the fascists. About their militancy, their opinions, Rossi admitted he had not been aware¹⁵. In September 1938, however, when the race laws were issued, he saw clearly: «I learned that [...] I was no longer a citizen of my country and that, in Italy, my activity as a teacher and scientist had come to an end»¹⁶.

At his university, there were about fifty professors and other academics who were classed as Jewish and thereby dismissed by the rector, the archaeologist, Carlo Anti¹⁷. In the Faculty of Science, the physics group was wiped out: besides Rossi those who had to go included his close collaborator Sergio De Benedetti, who emigrated to France and then to the United States, and the visiting professor Leo Pincherle (1910-1976), son of the paediatrician Maurizio Pincherle and a pupil of Fermi, who settled in Great Britain: neither of them returned.

To go abroad as soon as possible

As early as February that year Rossi had declared his intention of spending another period abroad for research. But now it was a matter of having to

¹⁴ ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», minutes of oath-taking, 21 March 1933, before the rector, Carlo Anti, and two witnesses.

¹⁵ B. Rossi, *Moments in the Life*, cit., pp. 25-26; on his failing to understand about Pancini and Curiel, the nephew of the socialist philosopher, Ludovico Limentani, who was a professor at Florence. On these cf. at least the respective entries, Nando Briamonte, *Curiel Eugenio*, in *DBI*, 31, 1985 <<http://www.treccani.it>> and Leonardo Bariboldi, *Pancini Ettore*, in *DBI*, 80, 2014 <<http://www.treccani.it>> (accessed 10 June 2020).

¹⁶ B. Rossi, *Moments in the Life*, cit., p. 39-40.

¹⁷ Many pages dedicated to Padua in the collection by Angelo Ventura, *Il fascismo e gli ebrei. Il razzismo antisemita nell'ideologia e nella politica del regime*, Rome, Donzelli, 2013, especially pp. 112-171.

leave Italy, his widowed mother in Venice, and the laboratory of the physics institute he had set up the year before. It was not easy. It was his wife Nora who insisted: they had to go as soon as possible, both of them; practically all her family were doing the same.

The first problem was that his documents were not in order. «But in Italy – he asserted- in case of need one will always find someone who is willing to help and knows how to do it»¹⁸. He asked the president of the Accademia d'Italia if he could complete a fellowship abroad interrupted a good six years earlier in Paris, which would require a renewed passport. The new president of the Accademia d'Italia, Giancarlo Vallauri (1882-1957), an electrical engineer, arranged it and included a sum of money.

Things were actually rather different and more complicated: first of all Rossi requested permission to renew his lapsed passport from the rector at Padua, and the next day the rector made an official request to the Ministero dell'Educazione nazionae (MEN) for the professor to be able to go to Copenhagen. Not only that, but from papers luckily retrieved at the Università di Palermo, it emerges that Anti, the rector at Padua, wrote a brief letter of recommendation to the principal secretary at MEN: «You know that he is a Jew: but, if there are no legal provisions to the contrary, I will recommend that his request be favourably entertained»¹⁹.

The Ministry of the Interior checked the truth of the Jewish professor's statement, namely that he had a study grant from MEN. It seemed not; the lecturer had actually declared that the grant had been conferred on him by the Accademia d'Italia. Was it appropriate or not to grant him the passport? No-one seemed willing to take responsibility; one ministry referred it to the

¹⁸ B. Rossi, *Moments in the Life*, cit., p. 40.

¹⁹ ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», Carlo Anti to Carmelo Calamaro, Padua, 9 September 1938, and his formal request to MEN, the same date, followed by the papers mentioned in the text, including the Ministry of the Interior's urgent telegram to MEN, 26 September 1938, and the anodyne reply, 1 October 1938. In the Archivio storico of the Università di Padova, hereafter ASUPd, *Professori di ruolo e incaricati cessati*, b. 5, f. 90, «Rossi Bruno», of these papers there is only the rector's letter to MEN, 9 September 1938, and in addition Rossi's letter to the rector, 8 September 1938.

decision of the other and vice versa; with corrections and checks almost a month went by. On 4 October a telegram from the minister, Giuseppe Bottai, to the rector granted permission²⁰.

Rossi, on the contrary, had not wasted time. From the start of September 1938 he had connected with his good contacts, not only in Europe but also the United States. The request for documents had gone out on the 9th of the month, and that was already after he had made arrangements for going abroad and for a first stop. While awaiting useful offers of employment, he decided meanwhile on a nearby destination; Niels Bohr (1885-1962), at the Institut for Teoretisk Fysik, was expecting him, even if only as a unpaid guest. The «suspension from service» at the Università di Padova took place on 16 October 1938, on 12 October the couple left by train for Copenhagen.

Great Britain must not let him escape!

In the middle of December 1938, after a two-month Danish interlude, Bruno and his wife, as is known, moved to Manchester where Patrick Blackett (1897-1974) had invited him on a fellowship of the Society for the Protection of Science and Learning.

What is not well known is that the SPSL of London had taken an interest in him from early in September, when Rossi was still in Italy. Apart from assessing requests for assistance from displaced scholars, the Society in fact considered it useful for its mission of protection of science from Nazism and Fascism to contact and possibly recruit the excellent people who had been expelled. The «Italian physicists» were certainly considered as such; the secretary of the SPSL had requested information on them at the beginning of September.

She turned to Rudolf Peierls (1907-1995), a Berlin physicist who, when Hitler took power, was in Cambridge for research and actually had obtained British

²⁰ Ibid., telegram from G. Bottai to the rector of Padua, and from the rector Carlo Anti to Bruno Rossi, both, 4 October 1938.

citizenship in 1938. From hitherto unexplored correspondence it appears that on 9 September Peierls, just arrived in Copenhagen, was able to suggest to Miss Esther Simpson, «confidentially, at least one of the displaced Italian physicists» intending to leave Italy, namely Professor Bruno Rossi. He spoke of him immediately to Blackett²¹. Negotiations between the latter and the SPSL were set in train to invite the Italian physicist to Great Britain. In his 1987 autobiography, on the other hand, Rossi, who strangely does not mention Peierls, a future leading figure in nuclear physics and a member of the British team in the Manhattan project, attributed this invitation to the generosity of Bohr, who during a meeting in Copenhagen on 25-29 October had introduced him to several cosmic ray specialists, among them Patrick Blackett, the future Nobel prizewinner for physics in 1948, whom he actually knew²².

As a matter of fact in November Niels Bohr warmly supported the application presented by Blackett to the SPSL to provide a grant so that Professor Rossi, dismissed from the Università di Padova as a Jew, could work with him for a year in the Physical Laboratories of the University of Manchester.

But let us look at the dates: the notes in the SPSL file show us the British had moved in September - Blackett probably at the urging of the alerted Peierls - that is, a month before Rossi left Italy. That Rossi was a big gun the British physicist knew very well: in 1931 it was actually at the request of his Italian colleague that he had welcomed the gifted Giuseppe Occhialini to Cambridge to work on the use of cloud chambers. Blackett and Occhialini had together

²¹ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, letter from Rudolf Peierls to Esther Simpson, 9 September 1938, with date of receipt stamped 10 September.

²² Cf. B. Rossi, *Moments in the Life*, cit., p. 41: this his only reference to the SPSL. The role of Rudolf Peierls in the nuclear bomb, as well as his militant role in the nuclear disarmament movement from the 1970s are widely remembered, from the entry by Erik Gregersen, *Sir Rudolf Ernst Peierls*, in *Encyclopaedia Britannica*, 15 September 2019 <<https://www.britannica.com>> (accessed 10 June 2020) to the obituaries, among them Sam Edwards, *Rudolf E. Peierls*, «Physics Today» 49, 2, 1996, p. 74. Rudolf Peierls' autobiography, *Bird of Passage. Recollections of a Physicist*, Princeton, Princeton University Press, 1985 (which in its turn does not mention Rossi), came out five years before the English translation of Rossi's autobiography, whose original edition was in 1987.

published crucial results, even though the 1948 Nobel prize for physics was awarded only to the Englishman. The anti-fascist Occhialini had already gone to Brazil in 1937, to São Paulo²³. Professor Rossi must go as a guest to Copenhagen; meanwhile Blackett sought a way of bringing him to Manchester.

On 4 October David Cleghorn Thomson, who a few months before had been appointed general secretary of the SPSL, called to put the matter to him. They discussed it several times²⁴.

The role of the SPSL

Thomson was a journalist, for years director of the BBC in Scotland, a candidate for the Labour Party, to which Patrick Blackett also belonged, and he was a friend. Declaring this, on 1 November Thomson asked Niels Bohr for a testimonial on the importance of the Italian physicist's research. He then wrote direct to Rossi: he proposed that he should come to Manchester on a grant to work with Blackett and sent him the SPSL questionnaire for displaced scholars²⁵. Two days later, Blackett presented the formal

²³ Mary Jo Nye, *Blackett: Physics, War, and Politics in the Twentieth Century*, Cambridge (MA), Harvard University Press, 2004; Stephen Budiansky, *Blackett's War: The Men Who Defeated the Nazi U-Boats and Brought Science to the Art of Warfare*, New York, Knopf Doubleday Publishing Group, 2013. It is well known how disappointed Italian physicists were about the overlooking of Beppo Occhialini in the Nobel prize awarded only to Blackett. I wonder if Rossi, who remembers the collaboration between the two and the extreme modesty of his pupil (almost his age) may have been influenced, in his memory of the connection from almost half a century earlier, by subsequent events. On this issue there is a difference between the Italian edition and the later English edition. He did, even so, claim to have pleasant memories of Manchester, despite the place, because of the human solidarity and his warm relations with Patrick Blackett and his wife Constance; see B. Rossi, *Moments in the Life*, cit., pp. 24-27, and p. 42.

²⁴ On the appointment of David Cleghorn Thomson (1900-1980), see Society for the Protection of Science and Learning, «Nature», 142, 1 July 1938, p. 201. The Rossi case is not even mentioned, even though it had been followed for ten years, in the general history by Norman Bentwich, *The Rescue and Achievement of Refugee Scholars. The Story of Displaced Scholars and Scientists 1933-1952*, The Hague, Martinus Nijhoff, 1953, later Springer Science & Business Media, 2012.

²⁵ Cf. BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48; the file contains the few unsigned notes of conversations with Blackett about Rossi, 4 October 1938, and another undated but the end of October 1938, as well as letters from David Cleghorn Thomson to Rossi and to Niels Bohr respectively, both 1 November 1938.

application for a grant, the largest possible as Rossi was married. He explained that Rossi would probably find a permanent position in the United States, given his prestige, together with assistance from Bohr, who was about to go there. But

in the meantime it will be of very great value to the comic ray research of this country if Professor Rossi is enabled to work on experimental research.

I would, of course, be extremely pleased if it were possible to keep Professor Rossi permanently in this country but this might be difficult as openings are so few and far between²⁶.

Best to act quickly: Rossi could begin immediately and in a year would certainly do great work. The secretary general of the SPSL welcomed the message: on 4 November he confirmed that he would take the matter to the next meeting, even before receiving replies from Copenhagen, which arrived on the 9th of the same month.

Bohr's convincing recommendation underlined the debt owed by the international community of physicists to the excellent Italian physicist:

a great number of the problems which are in the moment so assiduously studied in laboratories in many different countries arouse directly out of the results of Prof. Rossi's investigations [...] I am therefore sure that the collaboration with scientists outside his native country, to which the political developments in Italy have so unexpectedly forced him to seek, will prove most successful and satisfactory in every respect²⁷.

For his part Rossi replied to Thomson with a short letter of thanks «for the kind interest you are taking in my case». He assured him that he had a regular passport, which would allow him to return to Italy when he wished, with the address of via L. Mocenigo 13, Lido-Venezia (where his mother and his brother Giorgio were living). He sent him a CV, a list of his 60 publications,

²⁶ Ibid., letter on headed notepaper from P. Blackett to Thompson [sic], 3 November 1938.

²⁷ Ibid., letter from Niels Bohr to the SPSL, 7 November 1938. In the file there are also an unsigned typed minute the same text, a covering letter for the «testimony desired» from Bohr to D.C. Thomson, of the same date, and replies from D. C. Thomson to Bohr and Rossi, both 9 November 1938. The question arises whether the recommendation, so aimed to show the convenience for the British of inviting Rossi, might not have been already prepared in London so that Bohr could simply sign it.

some extracts and the completed SPSL questionnaire²⁸. He stated that he had enough money to manage without work for a couple of years in Italy, but for only a few months abroad; he declared his preference to move to Great Britain with his wife, or, in order, to Canada or the United States of America; he declared that he could read English well and write it quite well, and speak «a little». He also knew French and German, the language in which he had been used to communicate with Walter Bothe and other German physicists when he was in Berlin in 1930, where he had met Patrick Blackett for the first time, who was on a visit from Great Britain²⁹. For the required references, he indicated in the questionnaire precisely Bothe and Heisenberg, in addition to Enrico Fermi and the Frenchman Louis De Broglie.

Negotiations between Manchester-London-Copenhagen

The busy correspondence with the SPSL in November 1938 shows that Blackett was continuing to seek funds:³⁰ to invite Rossi he obtained £100 from the University of Manchester, and £50 from an anonymous donor who, however, wished half to be given to another refugee «actually in need». He was hoping to succeed in scraping together £400 annually including the £250 he was expecting from the SPSL.

Or rather, he thought it was better to ask for just £125 for 6 months, and then if necessary, ask for a renewal. In short better a little, sure and instant, provided Rossi arrived by November. And documents? Thomson tried to set his mind at rest and gave him instructions on the matters to be dealt with. Of all this toing and froing the Italian physicist probably had no inkling. He let it be known that he wished to remain in Copenhagen until 10 December

²⁸ 28 BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48; the SPSL questionnaire completed by Rossi has the arrival date, 9 November 1938. His letter of thanks to Thomson from Copenhagen is dated 7 November.

²⁹ B. Rossi, *Moments in the Life*, cit., p. 15.

³⁰ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48; the correspondence referred to in the text includes letters from Blackett to Thomson, 17, 19, 21 and 24 November, 1 December 1938, and the respective replies from Thomson to Blackett, 18, 21 and 25 November 1938.

because Fermi would be passing through; it is to be remembered that at the end of the month he was about to move to America with his family.

On 28 November and again on 2 December 1938 the general secretary of the SPSL informed Rossi that the executive board had approved a grant of £250 annually so that he could work in Manchester with Professor Blackett, in the first instance for 6 months. Rossi replied that he would arrive in Great Britain in mid-December. On 11 or 12 December he booked in with his wife for a week at the Regent Park Hotel in London. He wanted to meet Thomson – the SPSL premises were at 6, Gordon Square – and to bring to his attention other Italian academics expelled from the university³¹. In addition he was engaged to speak to the Zionist Organisation, at 77 Great Russell Street, in his brother's name: this was probably Giorgio, who was a council member of the Zionist group for the Comunità israelitica in Venezia, and a collaborator in DELASEM, the delegation for the assistance of Jewish emigrants³².

In Manchester the Rossis were well: Bruno started work in January; he was happy to resume his experimental research, the laboratory was well equipped; they found a house at 9 Oak Road, in the Withington district. Patrick Blackett and his wife Constance were very welcoming.

Less than six months after, however, Bruno and Nora had left Great Britain and Europe.

The Royal Society of London

At the end of February, Blackett expressed to Thomson his intention of asking the SPSL for an extension of the grant for his Italian colleague for a

³¹ Ibid., SPSL note on Rossi's arrival and accommodation, dated 12 December 1938, and a letter from Blackett to Thomson, Manchester, 20 December 1938; this is followed by the letter of introduction from Esther Simpson, assistant secretary of SPSL, to J. Cohn, Zionist Organization, London, 28 December 1938.

³² For the Zionist activities of his younger brother Giorgio Rossi (Venice 24 May 1909 - Milan 17 May 1967), twin brother of Ruggero, a teacher, insegnante, which intensified from 1944, see the biographical and archival dossier in SIUSA, *Fondo Rossi Giorgio, o Comunità israelitica di Venezia. Ufficio deportati, 1945-1950 circa* <<https://siusa.archivi.beniculturali.it>> (accessed 10 June 2020).

further six months, or to propose something in any case. He knew that Rossi «of course was trying hard to obtain a post in USA, but if this does not succeed»?³³ The displaced scholars from Europe in search of work in America were now too many. A plan B was needed.

The general secretary of the SPSL was in agreement, and he threw out the idea of transferring to Rossi a fellowship granted to Walter Heitler (1904-1981), which was reserved for scientists of Jewish birth and which originated from the Royal Society. The Jewish scientist working at the University of Bristol no longer needed it, because he was about to have a post in Cambridge³⁴. On 10 March Thomson wrote to the Physics Committee of the Royal Society in London, to present the single candidature of Rossi with the relevant documentation. Or did they also want another candidate? The Council of the Royal Society as to meet to discuss it on 30 March, «but I feel sure that they will agree with the suggestion», Sir Alfred Egerton, professor of Chemical Technology at the Imperial College of Science as well as secretary of physics section of the Royal Society, told him beforehand³⁵. The grant was for £450 annually; after deducting what had already passed to Heitler, the available balance was enough for two years and a month. They conveyed this to Rossi, asking him if he had any other income. Besides the grant from the SPSL and that provided by Blackett, which amounted in total to £400 a year, and which would both come to an end, Rossi mentioned the possibility that the Italian government would allow him a very small pension, around £60 to £90 a year; but he was not sure either that he would have it or that it would

³³ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, Blackett to Thomson, Manchester, 28 February 1939.

³⁴ Ibid., several letters between Thomson and Blackett, on 2 and 3 March 1939; from this correspondence emerge another names of displaced scientists they were concerned with. The German physicist Walter Heitler (1904-1981) had had a Rockefeller fellowship in Copenhagen and Zurigo and a lecturing qualification in 1929 from Göttingen. Emigrating to Bristol in 1933, he eventually became a professor in 1941 at the Dublin Institute for Advanced Studies, and from 1949 to 1974 in the University of Zurich. Nevill Mott, *Walter Heinrich Heitler*, «Biographical Memoirs of Fellows of the Royal Society», 28, 1982, pp. 140-151.

³⁵ Ibid., Alfred Egerton a Thomson, 16 March 1939. In the normal pink sheets of the SPSL the autographed points with that tallies.

be given him while abroad³⁶.

The information was conveyed by Miss Simpson to the Royal Society. On 5 April 1939 the official communication came from Burlington House that the Council was assigning to Professor Rossi the Research Fellowship left vacant by the resignation of Dr W. Heitler. «Admirable proposition», but not without worry since it lasted just two years: «it should be understood that Professor Rossi continue his efforts to find a satisfactory permanent position», the SPSL secretary reminded Blackett and in less peremptory terms to Rossi himself³⁷.

A temporary visit to the United States?

Up to now he had avoided the request to complete the Emergency questionnaire that Simpson had sent him. Blackett as ever came to his defence: he was afraid that declaring himself a refugee available for war work in Great Britain would harm his connections in Italy. Was the register of such persons really secret? It was «absolutely confidential», the secretary assured him; no risk that the information would reach Italy; «but it is really a personal matter for Rossi to decide for himself»³⁸.

Learning of the Royal Society's decision, he apologized for the delay, signed the questionnaire, though carefully declaring himself available only for physics teaching, and wrote:

I cannot tell you how thankful I am to the S.P.S.L. for this grant. I can now look with much more confidence [sic] to the future: it is quite a different situation indeed, to have two years time for finding a permanent

³⁶ And in fact the ministerial provision for Rossi's pension was forthcoming, issued on 10 June 1939 and registered on 24 June, as in the tables reproduced by Annalisa Capristo e Giorgio Fabre, *Il registro. La cacciata degli ebrei dallo Stato italiano nei protocolli della Corte dei Conti 1938-1943*, Bologna, il Mulino, 2019, p.199. For the correspondence quoted in the text, BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, Simpson to Rossi, 20 March 1939 and Rossi's reply, 24 March 1939.

³⁷ Ibid., Esther Simpson to Blackett and to Rossi respectively, both on 19 April 1939, preceded by letters from Simpson herself to A.C. Egerton, 24 March 1939, and from the assistant secretary of the Royal Society to the Secretary of the SPSL, 5 April 1939, with a note of receipt on 14 April 1939.

³⁸ Ibid., Simpson to Blackett, 14 April 1939, in reply to Blackett's letter to her, 11 April 1939. For his and other war work questionnaires, BLO, MS, SPSL, b. 66/2, «Replies by refugee scholars to a questionnaire on their availability for war work, arranged alphabetically, L-Z, 1939».

position. I certainly never forget what the SPSL has done for me in one of the most difficult moments of my life³⁹.

It was 20 April. Two week later he wrote again to Simpson to inform her that he would be leaving for the United States with his wife. It was only to take part in a conference on cosmic rays in Chicago at the end of June, at the invitation of Professor Compton. «I resolved to accept this invitation chiefly in order to get in touch with American scientific circles and to look into the possibility of finding in future a permanent position in that country»; he emphasized that Blackett was also advising him strongly to go; he went on, almost justifying himself: «I hope that my temporary absence from England will not displease the SPSL»⁴⁰.

Certainly not, especially if his visit to the United States was approved by Professor Blackett, replied Miss Simpson. It was actually a sensible thing to do. It was sufficient if he communicated in advance the date and port of return to Great Britain. The SPSL would send him the fellowship monthly payment even while he was in Chicago⁴¹.

Behind the scenes

What Rossi in May 1939 presented as a short return voyage was a long prepared move. Knowing that this time it was a «more definite separation» from their families, «when the decision was made» they went to Geneva to say goodbye to them, Nora remembered⁴². She did not specify the date, but in a handwritten note of 3 March 1939 someone at the SPSL noted that Rossi was going to see his father-in-law in Switzerland, and he could be reached at

³⁹ Ibid., b. 338/4, f. «Rossi Bruno», 1938-48, Rossi to Simpson, Manchester, 20 April 1939. This letter is the source of their home address.

⁴⁰ Ibid., Rossi to Simpson, Manchester, 8 May 1939. The underlinings in the quotations are mine.

⁴¹ Ibid., Simpson to Rossi, London, 10 May 1939; and subsequent letters for an appointment and for the monthly cheques for June and July.

⁴² Nora Lombroso, *As for me*, in B. Rossi, *Moments in the Life*, cit., p. 165.

the address of Professor G. Ferrero, 8 rue Hotel de la Ville, Geneva⁴³. In fact his wife's parents, Ugo and Silvia Lombroso, were at that period living in Paris; while in Geneva (perhaps they too went there on that occasion) were the historian Guglielmo Ferrero and his wife Gina Lombroso, Nora's uncle and aunt, who were both very great admirers of the United States, where they had been many times, being welcomed even at the White House.

As early as February Bruno had sought to obtain from Italy permits to enter the United States, but he did not manage to get them. He would either find work in the States first, or he would be satisfied going and then returning on a temporary permit: this was Blackett's logical conclusion⁴⁴. It is clear, however, that Rossi wanted visas under quota. And these he got, in March, after the visit to Geneva, thanks to the American Consulate in London. He went there in person, to Grosvenor Square, and first obtained a recommendation. Even from the secretary general of the SPSL: «Professor Rossi is a really eminent Italian scientist and we are glad to have been able to help him to continue his work in Manchester in the laboratory of Professor Blackett». He needed documents to take part in an important symposium in the United States, explained Thomson, where many scientists were taking an interest in finding him a job and the British organization was «most anxious to do everything to collaborate with colleagues in the States in their effort on his behalf»⁴⁵.

On 7 June 1939 Bruno and Nora embarked at Southampton on the Normandie, with Chicago as their final destination at «their friend Mr. Arthur Compton». To the usual questions of the immigration inspectors, the two «North Italian» citizens replied that they had no intention of returning to the

⁴³ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, pink sheet, undated.

⁴⁴ Ibid., Blackett to Thomson, 24 February 1939.

⁴⁵ Ibid., minute from D.C. Thomson to the American Consulate General, London, 3 March 1939; unsigned autograph note, but the same date; for the information in the text, see Blackett to Thomson, Manchester, 24 February, Bruno Rossi to Miss Simpson, Manchester, 25 February, and her reply, London, 27 February 1939.

country from where they had originated, as was recorded⁴⁶. Waiting for them at the port of New York were Enrico and Laura Fermi, who had moved to America six months previously. They were to spend a couple of weeks there before going to Chicago; they would then go to the meeting on cosmic rays with Hans Bethe, Fermi's friend and his from the time when he was in Florence, who took them in his care. Bruno had thought of everything: being suddenly with old friends would help him and Nora Nora «in order to overcome the shock of the transition from one continent to another»⁴⁷.

In fact, they had arrived in the United States to stay permanently, as declared in their arrival documents. It was a courageous decision, because Rossi did not yet have a definite work contract. He did, however, have something in hand, much more than the invitation to a congress. But he had not spoken about it to the British, not even to the considerate Blackett. Sooner or later he would have to tell him.

The official version

More than a month after his departure, at last, in a long letter, Rossi communicated to the SPSL his real intentions, without going into details and with some adjustments. At the beginning it was a temporary position, he wrote to David Thomson on 12 July 1939.

I have been very doubtful, but finally made up my mind to accept a temporary position as research associate at the University of Chicago. The hope to find then a permanent position more easily in this country than in England persuaded me to take this decision. I cannot tell you, however, how sad I am not to go back to Manchester where I had such a pleasant time and so many facilities for my work⁴⁸.

The official appointment, which he stated he did not yet have, would be initiated on 1 August and paid on the 31st of the month. He therefore asked

⁴⁶ Ellis Island Foundation, *Passenger Search*, under name <<https://www.libertyellisfoundation.org>> (accessed by login 24 May 2020).

⁴⁷ B. Rossi, *Moments in the Life*, cit., p. 45.

⁴⁸ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, letter from Rossi to Thomson, Ann Arbor, 12 July 1939. He was at Ann Arbor for a physics Summer School.

if he could receive the SPSL grant up to that date; for his part, he offered «you could make use of me for the purpose of your Society».

In his brief and immediate reply, even though sympathetic to the «possible change of your plan», Thomson made clear that it was «unfortunately not possible for the money to continue from here to cover research in another country», and that the remainder of the grant would be used for another claimant. Three days later, however, he was assured that would also pay him for the month of August. In thanking him, on 13 August 1939 Rossi informed him that he had received his official appointment a few days before⁴⁹.

Here the correspondence of Rossi to the SPSL ceases.

In May 1947 it was the new secretary Ilse J. Ursell who contacted him at Cornell University, where seven years earlier the SPSL had learned from a note in «Nature» of August 1940, that he had been appointed. They wished to know his impressions of the United States and to have up-to-date information on his work, as they were doing with the scholars registered by the SPSL. He replied cordially⁵⁰.

Emigration to the USA: «a plan long meditated»

In the USA financial support for scientific research was abundant, laboratories were well equipped: all Italian physicists knew this. That was why Fermi had emigrated to America, realizing a long meditated plan, and by no means - explained Segrè who settled in Berkeley -, through an unexpected decision in consequence of the racial laws (which struck directly at his wife and some of his assistants). He was not Jewish, he was not obliged to leave his university chair, but his research projects in Italy were receiving only small amounts of money; in fact they had got bogged down, to say nothing of

⁴⁹ Ibid., draft from Thomson to Rossi, the first dated 21 July 1939, which is the same date as the arrival stamp of the quoted letter from Rossi, and the other 24 July 1939.

⁵⁰ Ibid., minute from Ilse J. Ursell to Rossi, 29 May 1947. The report was in «Nature», 3 August 1940, p. 169. As is known Rossi was now at MIT, from where he replied 8 July 1947. He now started a sporadic correspondence, up to March 1948, which in five successive short letters dealt with the return of publications given by Rossi to the SPSL.

continuous delays and bureaucratic difficulties even for research travel abroad. In the United States, on the other hand, exchanges were favoured, colleagues enthusiastic. Rossi had never been there, unlike Fermi, Occhialini and others, but as soon as he understood that he had no choice «but to try to begin a new life somewhere abroad», he too thought at once of America.

It was 18 September 1938 when he wrote to Arthur Compton (1892-1962) to ask for help. He briefly explained the situation in which Jewish professors found themselves in Italy; not yet officially expelled from the Università di Padova he had already agreed to spend a couple of months in Copenhagen, at Bohr's laboratory. «But afterward I should [sic] like very much to go to America, where the physical [sic] studies are so much developed, and find there the possibility to continue my scientific work and gain sufficient living for myself and my wife (I married just five months ago)»⁵¹.

Appealing to his «friendship and kindness to obtain good advice and help in a very difficult moment of my life», he turned to the American physicist, a Nobel prize winner in 1927.

An opportunity for American physics

Arthur Compton knocked on many doors to rescue his young friend. His tragic situation «was heart-rending», and his request came just while the University of Chicago was expanding its physics programme to the point where «we certainly shall be soon the world's center for cosmic ray research», exclaimed Compton. Well then «there is no one whom I should rather have collaborating with me in this work than Rossi»⁵².

It needed a remarkable financial outlay. In November 1938, Compton decided to turn to Lessing J. Rosenwald (1891-1979), a Chicago-born entrepreneur, an art collector and philanthropist, who had succeeded his

⁵¹ NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944, copy of the letter from Rossi to Compton, Venice, 18 September 1938, sent on from Compton to Lessing J. Rosenwald, 12 November 1938.

⁵² Ibid.

father both as president of Sears up to 1939 and in the management of the Rosenwald Fund, which financed institutions and scholars, especially Afro-Americans and Jews. Compton unpicked the advantages and disadvantages of the case: in his opinion Rossi was «the leading investigator of cosmic rays in Europe, perhaps in the world». He knew personally him «and his family [...] they are Italians of the highest type, a credit to any society».

Certainly competition in the qualified labour market generally provided serious drawbacks; but in the Chicago centre they had already taken on three American physicists, and Compton guaranteed that, «in spite of Rossi's superior research ability», one of these would maintain the highest role in administrative capacities. Bringing even more Jews into the United States was a gamble. «Nevertheless [...] here is an opportunity to make use of the services of a man who is uniquely able in his fields. It would be a world tragedy to have his abilities go to waste»⁵³. In practical terms Compton reckoned that to use Rossi's abilities it would be necessary to offer him \$6,000 a year. Who could he ask for support? Perhaps the Fels Foundation⁵⁴? This was a philanthropic foundation set up in 1935 by Samuel Fels, the son of a Jewish refugee from Bavaria in 1848, which had also contributed to the Hebrew Immigrant Aid Society in Philadelphia. Whether they tried is not known; but after a few weeks the case came to the organization best suited to deal with it, namely the Emergency Committee in Aid of Displaced German Scholars in New York, started in 1933 and which just then, in November 1938, was changing its name to open up to Foreign Scholars fleeing from many European countries.

The interest of the Rosenwalds and the interest of the ECADFS

The recommendation to the Emergency Committee came from the New York

⁵³ Ibid.

⁵⁴ Ibid. Historical notes on the Fels Foundation on the web site <<http://www.samfels.org>> (accessed 10 June 2020).

philanthropist Fred Stein, who was one of its three founders, with Stephen Duggan, the chairman of the organization. Stein was in continuous contact with the Rosenwald family, and, perhaps at their suggestion, had received a letter from Professor Compton regarding a possible grant to the Italian physicist Rossi.

In New York, members of the Committee discussed this at their meeting of 5 December. The figure of \$6,000 was judged to be beyond the aims of the ECADGS, as the secretary, Miss Betty Drury, reported to Stephen Duggan, in a confidential memo of 22 December 1938⁵⁵.

The case was not closed, however. Chiefly because the Rosenwalds cared greatly about it and wanted to entrust it to the ECADFS. Saying no to them was difficult and particularly inappropriate. Stein insisted that looking after Rossi «might result in assistance to us [The Emergency Committee] of a practical sort from the Rosenwalds. In addition to that, there is, of course, the desirability of helping such an outstanding scholar as Rossi is», added Drury⁵⁶. The proposal was that Stein would reply informally to Compton that the ECADFS was able to contribute to Rossi's salary with a grant of \$1,200 to the University of Chicago for one year, if Compton could find further financial backing from the Rockefeller Foundation or other organizations. What did Duggan think? In his own hand he replied that he agreed. He had seen Lessing Rosenwald the day before: he would be an «excellent ally» for the Committee.

This was the decisive point in the «Rossi matter», it was emphasised many times.

Of the physicist in question they had not asked for even his CV, and in general the Emergency Committee of New York at that time knew very little about Italian displaced scholars, unlike the SPSL. Miss Drury forwarded to

⁵⁵ NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944, memo from Betty Drury to Stephen Duggan, 22 December 1938. The date of the Committee meeting emerges from a later memo of 25 April 1939.

⁵⁶ *Ibid.*, memo 22 December 1938, at the foot Stephen Duggan's signed reply.

David Thompson in London the first requests for information on the «Situation in Italy» which, in mid-September 1938, had been addressed to her and which, not by chance, concerned the Jewish scientists and mathematicians that Mussolini was hounding. It was not until the beginning of December that «Science» published news of the famous Jewish scientists being expelled from Italian universities, picking up the list that had appeared two months earlier in the Italian press.

Among these was Bruno Rossi⁵⁷.

The «Rossi matter»

In December, however, the negotiations of the Emergency Committee in his name seemed blocked. The correspondence preserved in his file shows how diplomatically it was proceeding: the lawyer Bernard Flexner (1865-1945), a collaborator of Louis Brandeis and an ardent Zionist, was working behind the scenes for ECADFS with Duggan; Fred Stein was maintaining his contacts with Arthur Compton on one side and with the Rosenwalds on the other⁵⁸. They were attempting to explain to the Chicago physicist that they could pay only a contribution for the salary of a displaced scholar, not the costs for research facilities. As she normally did with their scholars, Miss Drury arranged a meeting for Rossi on 10 January; he cancelled, from Manchester, citing another engagement⁵⁹.

Months later, in late April, it was Compton who resumed contact with Stein:

⁵⁷ NYPL, MAD, ECADFS, VIII, C., Subject files, b. 203, f. 3, «Situation in Italy», Betty Drury to David Thomson, 16 September 1938, and a typed summary of the *Scientific News and Notes*, «Science», 2 December 1938, p. 522. On the under-estimation of the racial measure in Italy on the part of the ECADFS, see Patrizia Guarnieri, *L'emigrazione intellettuale ebraica dalla Toscana*, «Atti e Memorie dell'Accademia La Colombaria», Firenze, Olschki, 2020, pp. 265-280.

⁵⁸ There were two Flexners on the Emergency Committee, the lawyer, who had worked for years in Chicago, and his younger brother, who was a doctor. See *In Memoriam. Bernard Flexner, 1865-1945*, «Social Service Review», 19, 2, 1945, p. 264. Mr Fred Stein, the namesake of the German photographer who later moved to New York, was then living at 270 Madison Avenue, New York.

⁵⁹ NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944, unsigned note, 21 December 1938, which suggested that Compton also sounded out the Rockefeller Foundation and the Oberlaender Trust.

he had not succeeded in finding a permanent position for Rossi in the USA; the latter, however, had written that he was intending to come to the States for a symposium at the University of Chicago, and they would pay his expenses. If the offer from the Committee of a contribution of \$1,500 was still valid, the university could offer him a fellowship of \$2,000-2,500 a year for two years, after which he was sure that Rossi would be settled. He at last attached a copy of his CV: «he is really an exceptional man. Our country will be the richer having him as a citizen»⁶⁰.

Seeing that Compton had arrived at more moderate demands, Stein had him present a formal application; he discussed it by telephone with William and Lessing Rosenwald: they guaranteed \$1,500 for the second year, as long as the ECADFS paid in advance for the first. The ECADFS members to whom Miss Drury sent the enquiry into the matter on 25 April expressed their votes by post. This time it was positive: on 29 April they informed Compton in Chicago; on 2 May, Stein communicated it to dear Bill, in other words, William Rosenwald, at 122 East, 42nd Street, New York.

All sorted out, in short, within a few days.

It took Compton more time to reply; on 9 May he thanked Miss Drury, but delayed Rossi's appointment until 1 July. It was not possible to start it immediately, he wrote, because the dean, Mr. Gale, was not in Chicago⁶¹.

Arrival in Chicago. The official version

There were mostly other complications, given the overlap of donors in Great Britain and the United States. On 20 April 1939, Rossi had accepted the two years fellowship at the University of Manchester which the SPSL had procured for him through the physics section of the Royal Society; on 29 April

⁶⁰ Ibid., letter from Compton to Fred M. Stein, 19 April 1939. The copy of the CV is identical to that given to the SPSL.

⁶¹ Ibid., in date order, the correspondence mentioned in the text: Betty Drury, «Memorandum», to the members of the Executive Committee, 25 April 1939; William Rosenwald to Fred Stein, 27 April 1939; Stein to Rosenwald, 2 May 1939; Compton to Drury, 9 May 1939.

the ECADFS had agreed to the two years fellowship at the University of Chicago. It was probably out of embarrassment towards his colleague Blackett and Thomson, who had shown him continuous and generous interest, that Rossi delayed with Compton the official start of his American appointment, so as to claim that it had been offered to him after his arrival in Chicago, and saying nothing about how they had offered him a two-year fellowship long before he had crossed the ocean.

The Rossis had disembarked in the USA on 12 June. It was not until 23 August that the University of Chicago formally communicated to the Emergency Committee that the effective appointment of Dr Bruno Rossi as research associate in the Department of Physics for the academic years 1939-40 and 1940-41 had been accepted from the 1st of that month⁶².

Even in his autobiography Rossi maintained the official version and placed at the end of July 1939 the offer of the post in Chicago with a salary of \$2,500 paid by the ECADFS and his subsequent decision to remain in the US⁶³. His biographers, both Italian and American, have accepted this version, repeating that in 1939 Compton invited him to the cosmic ray symposium and that he, even reluctant to leave Europe, went there and then remained; or rather they say that he turned to Compton when he was in England because he was worried by the escalation of the war⁶⁴. Instead the dates and the comparison with the contemporary correspondence leave little doubt that Rossi had always pursued the aim of moving to work in the United States, considering Great Britain as only a first step and possibly a fallback solution.

Certainly it was lucky that Rossi did not remain in Manchester, seeing that

⁶² Ibid., the secretary John F. Mauldies [?] to ECADFS, University of Chicago, 23 August 1939 (received the day after).

⁶³ B. Rossi, *Moments in the Life*, cit., p. 49.

⁶⁴ As regards the biographical essays by several authors cited in the bibliography, from Bonolis to Clark, on just this matter an exception is made by the work of Alessandra Gissi, *L'emigrazione dei maestri. Gli scienziati italiani negli Stati Uniti tra le due guerre*, in Angiolina Arru, Daniela Gia Caglioti, Franco Ramella (eds.), *Donne e uomini migranti*, Rome, Donzelli, 2008, pp. 145-161, which also for Rossi (Ibid., pp. 154-155) makes use of the ECADFS sources, but not those of the SPSL.

Italians in Great Britain were sent to internment camps as enemy aliens, including some twenty academic refugees, among them the physicists Leo Pincherle and the young Vinicio Barocas, who had graduated at Arcetri in 1938⁶⁵. But this awful experience happened after Italy's proclamation of war on 10 June 1940. Rossi had left for the United States more than a year earlier. America was always the final goal in his projects, as becomes clear from the crossover of papers from New York and London.

Settled earlier than expected

In the summer of 1939 he set to work at once, after the symposium and a short holiday as guests of Arthur and Betty Compton on Otsego Lake⁶⁶. At the Reyeron Physical Laboratory in Chicago he measured the half-life of the particles known as muons which reached the earth as cosmic rays and whose nature was not clear. The experiment was conducted at high altitude in Colorado and also confirmed the time dilation effect at near-light speeds predicted by Einstein's theory of relativity.

There were three excursions in the Rocky Mountains, each summer up to 1941.

As early as spring 1940 he decided on a change in his life and profession. In June it was Arthur Compton who dutifully gave notice to the Emergency Committee, well in advance:

It is with mixed feelings that I have to inform you that Dr. Bruno Rossi, a part of whose salary is being supported here at Chicago through funds from your Committee, will leave the University Chicago on October 1, 1940 [...] While we are sorry to lose his valued services, we are pleased to find that he has won a permanent and suitable place for himself in this country⁶⁷.

⁶⁵ As noted by Simone Turchetti, *Tracce e transiti*, cit., p. 66. See Lucio Sponza, *Divided Loyalties. Italians in Britain during the Second World War*, Bern, Peter Lang, 2000.

⁶⁶ See B. Rossi, *Moments in the Life*, cit., pp. 47-55, for the account of this three expeditions in the Rocky Mountains.

⁶⁷ NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944, Compton for the attention of Stephen Duggan, ECADFS, Chicago, 22 June 1940.

It had happened before the two expected years. So much so that the Rosenwald Family Association did not have to pay out the grant for Rossi's second year, which in fact does not appear as a beneficiary of their programme in the ECADFS inventory. Duggan and Stein, however, had been clear-sighted when they sought to lure the Rosenwalds towards the Rossi case; and this aim was achieved: the Rosenwalds became a really excellent ally of the ECADFS, financing 47 grants from 1938. Those whom it benefited were chiefly artists and writers, intellectuals who were not academics, although the Rosenwalds' zero client was an experimental physicist and a professor; or paradoxically precisely because they saw that scientists like Bruno Rossi were in demand in any case, they decided to finance a special programme for intellectuals who found fewer opportunities in the market-place, and were generally younger⁶⁸.

Before the Italian physicist went to Ithaca, Bernard Flexner nevertheless wanted a detailed report from the secretary. Dated 29 July 1940, this is the last document in Bruno Benedetto Rossi's file at the ECADFS. He does not appear to have had any further direct contact with the organization in New York⁶⁹.

To Cornell University

The premature leaving Chicago especially pained Arthur Compton who, Rossi recalled, had sought in vain to have him confirmed in the post. On the other hand, the University had gained financial backing and could make use of it to take on another foreign physicist, temporarily. Compton at once proposed to the Emergency Committee a transfer of funds: from Rossi, who had left in

⁶⁸ The 47 Rosenwald grants are included in the total of 335 grantees awarded by the ECADFS over 12 years, according to the relevant Series Description, ECADFS Records, 1927-1949, 2007 <<http://archives.nypl.org>> (accessed 10 June 2020). It is not possible, though, to make general statements on the type of recipients, who include the experimental psychologist Renata Calabresi and the by no means young sculptor Dario Viterbo.

⁶⁹ 69 NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944, draft of B.D.[rury] to Bernard Flexner, 29 July 1940.

September 1940, to Victor Regener (1913-2006), who entered service on 1 August at a lower salary⁷⁰.

He was the son of the great German physicist Erik Regener, with whom Rossi had been at Stuttgart and whom he considered among his dearest friends back in 1930; the young man had escaped from Nazi Germany and in 1938 had had a post for two years actually at the Università di Padova, from which Rossi had been expelled: he had just arrived in the USA. The Chicago institute had already recruited four other refugee physicists from Europe, including the Austrian Lise Meitner (1878-1968), with whom Rossi was friendly, and who would refuse to take part in the Manhattan project⁷¹. To take advantage of scientists fleeing Nazism and Fascism, as Compton boasted he was doing, was certainly a brain gain for the United States.

Rossi had been recommended to Cornell University by the German Hans Bethe (1906-2005), his contemporary, an immigrant in 1937, who was teaching in the Physics Department, where a post had fallen vacant. In April 1940 Bruno went to Ithaca, accompanied as always by Nora; he attended a seminar and after a few days they offered him the post of associate professor. They moved to Ithaca, in New York state: in December their first child was born, to whom they gave the name Florence.

At Cornell Rossi had his first American students, and he pursued his experiments with Norris Erenson and Kenneth Greisen in particular, with whom he published *Cosmic-Ray Theory* in 1941⁷². He started to collaborate with the Radiation Laboratory at MIT in Cambridge, and thus had the chance to meet frequently with Gaetano Salvemini, whose modest financial circumstances at Harvard he was aware of and whose clear knowledge of the

⁷⁰ Ibid., Compton to Duggan, Chicago, 22 June 1940. V. Regener is actually in the grantees list, see NYPL, MAD, ECADFS, I.A. Grantees, b. 28, f. 6, «Victor Regener», 1940-41, 1944; not a Jew but an opponent of the regime, he remained in the USA, see Mary DeWitt, *Obituary of Victor H. Regener*, «Physics Today», 30 January 2006 <<https://physicstoday.scitation.org>> (accessed 10 June 2020).

⁷¹ On his friendship with Erik Regener and Lise Meitner, see B. Rossi, *Moments in the Life*, cit., p. 19.

⁷² Ibid., p. 59.

political situation he appreciated⁷³.

The secret of Los Alamos

On 1 July 1942 he was promoted to professor of physics. About a year later he accepted Bethe's offer to take part in the Manhattan Project at Los Alamos: a very important and secret project whose content he easily imagined. Nora too had heard it spoken of by Fermi, but the word bomb was not even pronounced. On 19 July 1943 he went on reconnaissance to New Mexico, on his own, to see where they would live, in an area under military control, in wood cabins - more barracks than houses⁷⁴. From September he went on leave. The Los Alamos laboratory had just opened in April. Under the direction of Robert Oppenheimer they were developing new fast particle detectors used as diagnostics for the force of explosions; these detectors were later used in the physics of experimental particles. Among his collaborators was Norris Erenson, who had followed him from Cornell. Rossi dedicated a whole chapter of his 1987 autobiography to the experiments of these nearly three years and some reflections.

On 8 August 1945 Oppenheimer conveyed to all the participants in the Manhattan Project the thanks of Robert Patterson, the Under Secretary of War:

Today the whole world knows the secret that you have helped us keep for many months [...] The atomic bomb which you have helped to develop with high devotion to patriotic duty is the most devastating military weapon that any country has been able to turn against its enemy. No one of you has worked on the entire project or knows the whole story. Each one of you has done his own job and kept his own secret, and so today I speak for a grateful nation when I say, congratulations, and thank you all⁷⁵.

⁷³ Ibid., p. 65.

⁷⁴ Ibid., chapter 4. See also, for photos of the places, the site of the Bradbury Science Museum on the Los Alamos Scientific Laboratory, opened to the public from 1954 at the wish of the physicist Robert Krohn and Norris Bradbury, director of the laboratory <<https://www.lanl.gov>> (accessed 4 May 2020).

⁷⁵ Bradbury Science Museum Archive, *Manhattan Project, Correspondence*, message from Robert Patterson, Under Secretary Of War, conveyed by Robert Oppenheimer to the members

That same month they became American citizens. Bruno was naturalized in Santa Fè, Nora in Boston⁷⁶. Cornell University, from where Bruno was on leave, confirmed him as professor of physics from 1 July 1945; but they did not return to Ithaca when, on 6 April 1946, at last, they came away from the northern mountains of New Mexico, with their two little children: Florence and Frank, born on 10 November 1944 at the Los Alamos Hospital⁷⁷.

After the war

On 1 November 1945 Rossi had been appointed professor of physics at the Massachusetts Institute of Technology (MIT), which allowed him leave to complete his work at the Los Alamos Scientific Laboratory, which came under the control of the University of California⁷⁸. In February he moved with his family to Cambridge (MA), where he was awarded the direction of the cosmic ray group. He continued his studies on atmospheric showers and particle physics, in particular with cloud chambers and in 1952 he published *High-energy Particles*, which was for long the standard text for experimental physics of elementary particles. He had considerable means at his disposal for the experiments, and he aimed to form an international group of young collaborators, the MIT group.

of the Laboratory, 8 August 1945 <<https://lanlmuseum.pastperfectonline.com>> (accessed 4 June 2020).

⁷⁶ Dates and places of their naturalization are recorded in the ship manifest of the Sobiesky, on which Bruno e Nora Rossi embarked on 2 October 1947, see Ellis Island Foundation, *Passenger Search*, under name <<https://www.libertyellisfoundation.org>> (accessed by login 24 May 2020).

⁷⁷ So Rossi related to Ilse J. Ursell, SPSL, 8 July 1947, in BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48. In the same letter he wrote that he moved to Cambridge (MA) in February 1946, but in the autobiography he stated the day of their leaving Los Alamos in April, after receiving the offer from MIT in February; but the offer was earlier. The dates I have followed are those provided by the various institutions in the respective declarations of posts offered, at the request of Rossi himself in 1975.

⁷⁸ Università di Palermo, Archivio di deposito, *Facoltà, Docenti*, f. «Bruno Rossi», certificates of service authenticated respectively by Byron Saunders, Cornell University, The University Faculty, 13 February 1975; University of California, Los Alamos, 11 February 1975, and The Chancellor, MIT, 3 February 1975.

He liked the outlook he found among American colleagues and students :

especially the young people [are] very open minded and anxious to benefit from whatever new knowledge and experience I was able to bring to them on account of my foreign education [...]. Without being blind to its shortcomings, I like this country and have decided to remain here. However I am most anxious to do whatever I can to reestablish and strengthen the scientific and spiritual ties between this country and Europe. In the present troubled situation, I believe this to be very important also from a political point of view⁷⁹.

Thus he replied in July 1947 from Cambridge (MA) to the gracious secretary of the Society for the Protection of Science and Learning, who in Cambridge, England, was asking for his impressions of America.

And Italy? Certainly he felt that Italy under reconstruction had to commit itself to recover the arrears accumulated in a few years even in areas where she had excelled.

Just in that summer of 1947 Bruno and Nora took their first voyage to Italy, with Florence aged 6 and Frank aged 2⁸⁰. It was especially to see their friends and relatives again, as Nora recalled, and also because her parents had returned home, as had her brother from New York with his wife. In Genoa, Cesare resumed his interrupted specialist medical studies and Professor Ugo Lombroso was reinstated in his chair in physiology at the university.

In 1947 Bruno's father-in-law was a distinguished professor of 70; he himself was 44, famous worldwide and still with many years of scientific productivity. Yet the Università di Padova did not seek to reclaim him. His post had been taken by Antonio Rostagni (1903-1988), assistant at Turin until 1935, then professor at Messina; from 1938 as director at the institute of physics in Padua he appeared immovable, and was so, up to his retirement in 1973,⁸¹

⁷⁹ BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48, letter from Rossi to Ilse J. Ursell, Cambridge, 8 July 1947.

⁸⁰ See the return voyage registered for the Rossis from Genoa, 2 October 1947, Ellis Island Foundation, *Passenger Search*, under name <<https://www.libertyellisfoundation.org>> (accessed by login 24 May 2020).

⁸¹ Adele La Rana, *Rostagni Antonio*, in *DBI*, 88, 2017 <<http://www.treccani.it>> (accessed 10 June 2020).

despite the far superior merits of one who had been «dismissed» and should have been readmitted on the basis of the 1944 laws, in justice and to the advantage of the university and Italian science. But Rossi was out.

Readmission in post?

In his autobiography Rossi said nothing about Rostagni, nor on the question of his failure to be reinstated, a story that has so far not been reconstructed. The empty documentation is significant: among the very many papers ordered by date and kept at MIT, even student marks, correspondence classified by addressee, many institutions and names are listed, but not the Università di Padova. Which does not exclude the possibility that there might have been correspondence, although it does not appear in from Rossi's academic file in that university.

He seems rather to have paid attention to the Italian regulatory measure that he could avail himself of. When he was in Manchester, in January 1939 he presented a request for severance pay to the rector of Padua, who passed it to the ministry; for months he followed this practice until the ruling in June; from the United States, while he was living in Ithaca he asked for application of law 587 passed on 23 March 1940, which granted an allowance to state employees suspended from employment under the race laws, and deputed his brother Giorgio to deal with it from Venice, but he did so about a year later⁸². The most important reparatory regulations came out in January 1944, until the legislative decree of 27 May 1946 for the «readmission in post of university professors previously discharged for political or racial reasons»⁸³.

⁸² ASUPd, *Professori di ruolo e incaricati cessati*, b. 5, f. 90, «Rossi Bruno», letter from Rossi to the rector, 20 January 1939, to start the process for dealing with his pension, given as his address for communication that in the Lido di Venezia (his brother and mother); rector of the Università di Padova to MEN, Direzione generale dell'istruzione superiore, 27 January 1939, with transmission of Rossi's documents (missing from the file); in ASUAP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», copy of the same and in addition a request on franked paper from Giorgio Rossi to MEN, Direzione generale dell'ordine universitario, Venezia, 13 October 1941. For the laws in question see here <<http://intellettualinfuga.fupress.com>>.

⁸³ It is the RDL n. 535/1946 published in GU n. 145, 2 July 1946. See here the collection of reparatory regulations <<http://intellettualinfuga.fupress.com>>.

Of course, for those who had emigrated the difficulties were much greater. In most cases fates were decided at local level, that is by the faculties and their internal balances and imbalances. If disinclined to recall them, they would put a spanner in the works and most of all not speak to those directly concerned.

Among the incomplete series of papers from the Università di Padova received at the Università di Palermo there is a note to the Ministry of Foreign Affairs which has as subject: «Prof. Bruno Rossi, readmission». It is a minute with handwritten corrections, undated, but the letterhead is that of the Ministry of Public Education, and so the note is subsequent to the Royal decree 142 of 29 May 1944 of the Badoglio II government, which abolished the Ministry of National Education.

Unsigned by the minister, the minute refers to an earlier urgent telegram and to a ministerial circular relating to professors abroad to invite them to return. In some famous cases, for example the histologist Giuseppe Levi, the Biblical scholar Umberto Cassuto, the physiologist Amedeo Herlitzka, the three successive ministers in 1944 made every effort with the various universities to reinstate prestigious scientists and academics who had been expelled and taken refuge abroad. They did not always succeed, sometimes it took years.

The Ministry rendered impossible

Among other papers a letter emerges from the Ministry of Public Education (on paper still with MEN letterhead) dated 2 April 1946 and addressed to the Ministry of Foreign Affairs, which reconstructs the matter:

The Ministry as of 13 October 1944 by note 852 requests this department to invite Prof. Bruno Rossi, former professor of experimental physics in the Università di Padova and dismissed from office by the so-called race laws, to resume his chair in Italy, noting that from information obtained it appears that the said professor was residing in the United States of America (Itaca) [sic].⁸⁴

⁸⁴ ASUAP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno», cf. with the papers of ASUPd, *Professori di ruolo e incaricati cessati*, b. 5, f. 90, «Rossi Bruno». The Palermo file contains papers dealing with the Padua period, but both files have gaps of various sorts.

Actually Rossi was at that time professor at Cornell University, even if he had been nearly a year at Los Alamos, and completely absorbed in the Manhattan project. When and if the Ministry of Foreign Affairs had really been alerted to contact the professor there are no documents to say so. Certainly nothing was communicated to the Ministry of Guido De Ruggero, in office from June to December 1944, and not even afterwards.

The request of April 1946 was also sent for information to the rector of the Università di Padova, who was then Egidio Meneghetti (1892-1961), a pharmacologist and former partisan, member of the Venetian CNL (National Liberation Committee). He in turn passed the matter immediately, on April 4, 1946, to the dean of the Faculty of Sciences in which Rossi should have been reinstated⁸⁵. There was no answer, or at least no answer was kept in the incomplete papers.

The reminder was repeated by the ministry on 18 July 1946⁸⁶. In the meantime, however, matters had got complicated: if at first the readmission seemed automatically possible, it was now impossible to proceed without the express agreement of the party concerned. And he would have to have retained his Italian citizenship, a requirement of the legal decrees on reinstatement.

Rossi had it, when these decrees came out in January 1944, and also when the ministry was looking for him. But when he got in touch with the Ministry of Education between July and September 1946, it was too late: he had acquired US citizenship that year, he mentioned in a letter (or in August 1945,

⁸⁵ Ibid., letter from the rector to the dean of the Faculty of Sciences, 4 April 1946. On this rector, anti-fascist, former collaborator of Salvemini's «Non mollare», later fighter under the name of Anenore Foresta, arrested by the fascists and passed to the Germans, pro-rector beside Concetto Marchesi, see ANPI, Associazione nazionale partigiani d'Italia, *Egidio Meneghetti*, 2010 <<https://www.anpi.it>> (accessed 10 June 2020), and Chiara Saonara, *Meneghetti Egidio*, in *DBI*, 73, 2009 <<http://www.treccani.it>> (accessed 10 June 2020).

⁸⁶ Università di Palermo, Archivio di deposito, *Facoltà, Docenti*, f. «Bruno Rossi», MPI, DGIS, to the Ministry of Foreign Affairs, 18 July 1946. These papers are also much earlier than the period when Rossi would have been in Palermo, probably acquired at different times, and therefore not yet placed in the historical archive.

as shown by other documents). The ministry therefore replied that «they were unable to proceed to [his] readmission».

But the professor would have liked it, there seems no doubt, so much so that the Ministry promised to re-examine the case «exceptionally». The matter went on for years. In 1946 a measure was expected that could reopen the possibility; from a decree in 1948, it became law two years later: those who had lost their citizenship before the decree for reinstatement which had come into force on 15 January 1944 were readmitted to take up their positions again. Then, repeating the entire process, the General Direction for Higher Education «regretted to indicate that it is not possible to proceed with the readmission of the aforementioned professor» Bruno Rossi.

This was the definitive reply of the ministry, sent on 1 April 1950.

It certainly made him bitter⁸⁷.

American-Italian relations

He was particularly happy when young Italians came to MIT, some of whom remained in the United States, such as the Genoese Riccardo Giacconi (1931-2018), a student of his former student Beppo Occhialini, who in 2002 was awarded the Nobel Prize for physics⁸⁸. Others, however, arrived with the intention of bringing back to Italy what was needed for the reconstruction of physics after the harmful effects of the racial laws and the war. To this second group belonged the young Ugo Palma (1927-2012) and Beatrice Vittorelli (1930-2008), who joined MIT in 1953 from the Università di Palermo

⁸⁷ Ibid., MPI, DGIS, to the Ministry of Foreign Affairs, 1 April 1950, always with a request to communicate it to the person concerned. Neither the replies of the Ministry of Foreign Affairs nor those of Rossi have been found, but they are summarized in these long letters. The legislative provisions in question were Legislative Decree 1033 of 7 May 1948, paragraph 2, then law 23 of 5 January 1950, and RDL 9 of 6 January 1944, in OJ 15 January 1944, that is, the first provision for reinstatement.

⁸⁸ Riccardo Giacconi (Genova 6 October 1931 – San Diego 9 December 2018) was awarded the Nobel in physics «for pioneering contributions to astrophysics, which have led to the discovery of cosmic X-ray sources». See Mark Battiste, *Riccardo Giacconi*, in George Carpetto and Diane M. Evanac (eds.), *Italian Americans of the Twentieth Century*, Tampa (FL), Loggia Press, 1999, pp. 172-173.

with two scholarships⁸⁹; Livio Scarsi (1927-2006) from Milan in 1957, was another pupil of Beppo Occhialini who arrived with a Fulbright, and whom Bruno Rossi had approached during his passage to Genoa; and from 1964 Pippo Vaiana (1935-1991), also from Palermo, who came to work with Giacconi in AS&E, American Science and Engineering, a research body of whose board Rossi was chairman.⁹⁰

In 1957, the Soviet Union launched the first artificial satellite, Sputnik 1. In response, in 1958 the United States government created the National Aeronautics and Space Administration (NASA), inviting Rossi to the space science commission headed by Lloyd Berkner⁹¹. In this context, in 1958 Rossi discussed the possibility that extra-solar sources emitted X-rays and could be detected; he involved Giacconi, who was in Princeton, in the design of a new X-ray telescope. Many scientists were sceptical about the possibility of studying astronomy with X-rays, but NASA was looking for new ideas for missions. An Aerobee 150 rocket was launched in 1962 with an X-ray detector and discovered the first extrasolar X-ray source: Scorpius X-1, a binary system that included a neutron star.

In 1970 the first satellite specially designed for X-ray astronomy, Uhuru, also known as SAS-A, was launched, with a substantial contribution by Rossi and Giacconi to the design. SAS-A collected data for three years and detected 339 X-ray sources in the universe. In parallel, Rossi participated in the detection of maximum energy cosmic rays.

⁸⁹ Interview of Giuseppe Giuliani with Ugo Palma and Beatrice Vittorelli Palma, 7 October 2000, in *Le interviste*, ed. by Ilaria Bonizzoni, Pavia, undated <<http://fisica.unipv.it>> (accessed 29 May 2010).

⁹⁰ M.C. MacCarone e B. Sacco, *Livio Scarsi in memoriam (1927-2006)*, in Rogelio Caballero et al. (eds.), *Proceedings of the 30th International Cosmic Ray Conference*, Città del Messico, Universidad Nacional Autónoma de México, 2008, vol. 5, pp. 1195-1198. And respectively Riccardo Giacconi, *G.S. Vaiana memorial lecture*, in Jeffrey F. Linsky, Salvatore Serio (eds.), *Proceedings of Physics of Solar and Stellar Coronae: G.S. Vaiana Memorial Symposium*, held in Palermo, Italy, 2-6 June, 1992, Norwell (MA), Kluwer Academic Publishers, 1993, pp. 3-19.

⁹¹ Cf. interview with Bruno Rossi by Richard F. Hirsh, 21 July 1976, in American Institute of Physics, Niels Bohr Library & Archives, College Park (MD) <www.aip.org> (accessed 10 June 2020).

Becoming Institute Professor at MIT from July 1966,⁹² Rossi missed the Nobel but not the satisfactions and awards in the United States and beyond.

A member of the National Academy of Sciences and the American Academy of Arts and Sciences, he was given several awards, including the United States Medal of Science, the gold medal of the Italian Physical Society, the Elliott Cresson Gold Medal and the Wolf Prize in Physics.

It gave him much pleasure to receive an honorary doctorate in physics from the Università di Palermo.

A special relation with Palermo

After that first trip in 1947, he returned to Italy with his family in 1951, and then almost every year on his own. From 1957 they went to Palermo almost regularly, to the great joy of Nora who had spent happy and intellectually intense years there as a girl, and who loved to bring Florence, Frank and Linda, born in Cambridge in 1953⁹³.

The Venetian Bruno also fell in love with Sicily. He began to visit for scientific interests as well, thanks to the young scholars with whom he had come into contact with MIT, especially Ugo Palma and Beatrice Vittorelli, who had decided to study in the United States for a while, despite the old director of the Institute of Physics of Palermo Enrico Medi, the Christian Democrat regional secretary, who used to say: «Go... but if you go, there is no place for you when you come back»⁹⁴. They had not regretted it: in America in 1953

⁹² See Università di Palermo, Archivio di deposito, *Facoltà, Docenti*, f. «Bruno Rossi», request for rebuilding of career from B. Rossi to the rector of the Università di Palermo, 5 April 1975.

⁹³ In the Ellis Island Foundation database, travel to New York is currently shown only up to 1956; after the one already mentioned in 1947 the following arrivals: in New York on 7 September 1951 from Cannes on the Independence; by plane to Boston on 25 July 1953 from Rome-Paris with the TWA, alone; by plane to Boston on August 4, 1954 from Milan, alone; by plane to New York from Paris on September 14, 1955 alone. Regular visits to Sicily by the Rossis from 1957 are confirmed by Ugo Palma and Beatrice Vittorelli Palma, who were neighbours, in a commemorative speech the draft of which was kindly provided to me by Linda Rossi, whom I thank for her continuous availability. 1954 seems too early, as Palma himself mentioned in a subsequent interview, edited by Giuseppe Giuliani, 7 October 2000, made online by Ilaria Bonizzoni, Pavia, undated <<http://fisica.unipv.it>> (accessed 29 May 2020).

⁹⁴ Interview with Ugo Palma and Beatrice Vittorelli Palma, 7 October 2000, cit., p. 186.

they had also met the great Italian masters: Emilio Segrè in Berkeley and especially Bruno Rossi at MIT who had introduced them to Edoardo Amaldi, then chairman of the physics committee at CNR. The strategy was to rebuild Italian physics, which was exclusively nuclear, bringing a new field of research to Palermo, the physics of Rossi's cosmic rays or the astrophysics on which Giacconi and Occhialini worked. This is why the network of other international contacts became essential for them, and above all Bruno Rossi's recurrent presence in Palermo.

The Palermo environment was now favourable to cosmopolitanism. With a change of people, the situation had changed: Mariano Santangelo, from Castelvetro, who had gone to Rome after the expulsion of Emilio Segrè from Palermo, had wanted to return, and with him as director of the Institute of Physics began a rebirth. From the mid-1950s Alberto Monroy (1913-1986), a physician and molecular biologist of a noble Sicilian family of Spanish origin, politically leftist, presided over the Facoltà di Scienze, regularly visited research laboratories in New York with Alfred Mirsky and in Massachusetts. In 1936 he had been a pupil of Tullio Terzi in Padua, who was expelled and committed suicide; almost thirty years later, on 2 March, 1964, it was the dean Monroy who signed the unanimous proposal of the Faculty to confer an honorary degree on Bruno Rossi - affected by racial laws and a professor at MIT - «as a demonstration of recognition of the brilliant and fundamental results he has achieved in the field of cosmic radiation and space physics»⁹⁵. The rector sent the proposal to the Ministry of Public Instruction, which accepted it: on 23 April 1964 the ceremony was held for a double award: to Alfred Mirsky of the Rockefeller Foundation in New York, an honorary degree in biological sciences, to Bruno Rossi of MIT an honorary degree in physics. In the main hall of the Università di Palermo, Rossi spoke of «The interplanetary

⁹⁵ ASAUP, *Facoltà, Carriera scolastica degli studenti*, b. 5475, extract from the Faculty of Sciences, signed by A. Monroy, session of 2 March 1964, «Proposal for the awarding of an honorary degree». On his profitable American contacts, see also Fabio De Sio, *Monroy Alberto*, in *DBI*, 75, 2011 <<http://www.treccani.it>> (accessed 10 June 2020).

plasma»⁹⁶. For several years now, he had been attending lectures and seminars in that university, as well as in Florence, in the school of physics at Varenna and where they invited him. In 1969 he bought a house in Rome.

Meanwhile in Palermo in 1967 Livio Scarsi had the chair in experimental physics; Ugo Palma and Beatrice Vittorelli Palma were lecturers in the Facoltà di Scienze, and Giuseppe Salvatore (Pippo) Vaiana, winner of the competition in Florence and Palermo in 1975, opted for the post in Sicily and became director of the Astronomical Observatory⁹⁷. Amid all these appointments, in December 1973 the Facoltà di Scienze unanimously decided to appoint Professor Bruno Rossi «creator of entire new fields in Physics, a leading scientist and teacher, who stands out clearly on a worldwide scale»⁹⁸.

Readmission to the University

The appointment certainly brought prestige to physics at Palermo, to the entire faculty and to the university. And it had been prepared mainly by the Palmas and other teachers who had been linked to Rossi for years.

For him it was a kind of official compensation, albeit late. And so in a certain way it was put forward, recalling in the same faculty resolution that he had been «former professor of experimental physics in Padua from 1932 to 1938, the year in which he was dismissed from teaching by special law by the fascist government». However, this was not a reinstatement, which for university professors released from service for political and racial reasons should have been in the same position and in the same location from which they had been removed in 1938; and it was not even a readmission to service according to the norms envisaged and modified in the immediate post-war

⁹⁶ ASAUP, *Facoltà, Carriera scolastica degli studenti*, b. 5475, invitation card of Dean Monroy and rector Michele Gerbasi (1900-1994), pediatrician, for the two honorary degrees, and the previous letter of the Rector Michele Gervasi to the ministry, with stamp of receipt, 11 March 1964. Alfred E. Mirsky (1900-1974), Monroy's teacher, spoke on «Genetics and Human nature».

⁹⁷ On him the biography in the INAF site - Osservatorio Astronomico di Palermo «Giuseppe Salvatore Vaiana» <<http://www.astropa.inaf.it>> (accessed 10 June 2020).

⁹⁸ Università di Palermo, Archivio di deposito, *Facoltà, Docenti*, f. «Bruno Rossi», extract from the minutes of the Facoltà di Scienze, session of 20 December 1973.

period. For the faculty the appointment was made in accordance with Law 311 of 1958, art. 13, according to which «professors who have left the service for resignation can be readmitted to service on the proposal of a Faculty [...] after obtaining the favourable opinion of the First Section of the Higher Council of Education», and by ministerial decree⁹⁹.

Did he resign in 1938? Or had he been hounded out? Evidently they sought an expedient to achieve the aim, beyond the impossibility of reinstatement declared twenty five years before by the Ministry, as seen above.

In 1970 Bruno Rossi retired from MIT at 65, proclaimed emeritus in July, which allowed him to teach elsewhere as well, which was not allowed to those who retired at 70 years of age¹⁰⁰. In Italy, the retirement age for university professors started at 75, and 70 left the role. On the decree of the Minister of Public Education, Rossi was «reengaged as a *professore straordinario* in general physics»; a less prestigious teaching than that of experimental physics, with a qualification strangely inferior to that already achieved in 1936, which they granted him from 1 March 1974 for a period of three calendar years, since after three years the transition to full professor was given¹⁰¹.

That same year the Università di Roma appointed Emilio Segrè (who soon returned to Berkeley) who in 1938 had been expelled from Palermo but had resumed good relations with the profoundly renewed Istituto di Fisica there, unlike Rossi with the institute at Padua. He continued to live in Cambridge, spending just a few periods a year in Italy. Past the age of employment since November 1975, he was to retire from Palermo in November 1980 with a

⁹⁹ Ibid., the report refers to the law of 18 March 1958, n. 311, *Rules on the legal and economic status of university professors* (OJ n. 91, 15 April 1958), art. 13, c. 2 <<https://www.normattiva.it>> (accessed 6 June 2020).

¹⁰⁰ Massachusetts Institute of Technology. Libraries. Department of Distinctive Collections, *Bruno Benedetto Rossi papers*, MC-0166, b. 7, «Retirement album, 1970-1971» <<https://archivesspace.mit.edu>> (accessed 24 May 2020).

¹⁰¹ Università di Palermo, Archivio di deposito, *Facoltà, Docenti*, f. «Bruno Rossi», the rector to Bruno Rossi, 10 June 1974; reinstatement in service took place with DM 28 February 1974; *ibid.*, further correspondence with the same object to the dean of the Faculty of Science.

very complicated rebuilding of his career that recognized his years of previous service in American universities and in Florence¹⁰².

In 1985, the High Energy Astrophysics Division of the American Astronomical Society, based in Washington, established the annual Bruno Rossi prize in his honour, which would also be awarded to the BeppoSAX team represented by Livio Scarsi of the Università di Palermo¹⁰³.

In 1987 Rossi published his autobiography in Italy, with a final chapter written by Nora. He dedicated it to their three children. In addition to his wife, he thanked the many persons, without naming names, who had «helped me in my life and work». They were «friends of Arcetri» in Italy and «the countless students and collaborators in the United States», as he plainly wished to remind his Italian readers (not in the English translation of three years later), and above all those whom he had had «the luck to draw to the Massachusetts Institute of Technology in Cambridge, from the United States and from many other parts of the world»¹⁰⁴.

In Cambridge he lived past the age of ninety. In Florence, not far from Arcetri, he wished his ashes to be laid.

¹⁰² Ibid., rectoral decree 20 December 1978, registered with the Court of Auditors of Palermo, 17 October 1979; and Rossi's previous application with attached documentation. On employment *fuori ruolo*, various notes of the rector to the dean of the Faculty of Sciences, 11 November 1976, and from the ministry of IP, DGIU, to the rector of Palermo, 21 October 1976, where he is noted as full professor, although not yet passed the three expected years. It should be noted that Rossi's file is not yet available in ACS, MPI, DGIU, DP, FPPO, having been closed for less than 40 years.

¹⁰³ The prize is «for a significant contribution to High Energy Astrophysics, with particular emphasis on recent, original work», see <<https://web.archive.org>> (accessed 10 June 2020)..

¹⁰⁴ Bruno Rossi, *Momenti nella vita di uno scienziato*, Bologna, Zanichelli, 1987, p. VII.

Principal publications

- *Method of Registering Multiple Simultaneous Impulses of Several Geiger Counters*, «Nature», 125, 1930, p. 636.
- *On the Magnetic Deflection of Cosmic Rays*, «Physical Review», 36, 1930, p. 606.
- *Über den Ursprung der durchdringenden Korpuskularstrahlung der Atmosphäre*, «Zeitschrift für Physik», 68, 1-2, 1931, pp. 64-84.
- *Über die Eigenschaften der durchdringenden Korpuskularstrahlung in Meeresniveau*, «Zeitschrift für Physik», 82, 3-4, 1933, pp. 151-178.
- *Directional Measurements on the Cosmic Rays Near the Geomagnetic Equator*, «Physical Review», 45, 1934, p. 212.
- *Misure della distribuzione angolare di intensità della radiazione penetrante all'Asmara*, «La Ricerca Scientifica», 5, 1934, pp. 579-589.
- *I risultati della Missione scientifica in Eritrea per lo studio della radiazione penetrante (Raggi cosmici). Misure sulla distribuzione angolare di intensità della radiazione penetrante all'Asmara*, «La Ricerca Scientifica. Supplemento», 1, 9-10, 1934, pp. 579-589.
- *Rayons Cosmiques*, Paris, Hermann & Co., 1935.
- Leo Pincherle. *Lezioni di fisica sperimentale: meccanica-calore, da uno schema del Prof. Bruno Rossi*, Padua, GUF, 1936.
- With L. Jánossy, *On the Photon Component of Cosmic Radiation and its Absorption Coefficient*, «Proceedings of the Royal Society A», 175, 960, 1939, pp. 88-100.
- With P.M.S. Blackett, *Some Recent Experiments on Cosmic Rays*, «Reviews of Modern Physics», 11, 3-4, 1939, pp. 277-281.
- *The Disintegration of Mesotrons*, «Reviews of Modern Physics», 11, 1939, p. 296.
- With K. Greisen, *Cosmic Ray Theory*, «Reviews of Modern Physics», 13, 1941, pp. 240-309.

- *High-energy Particles*, New York, Prentice-Hall, 1952.
- With P. Bassi, G.W. Clark, *Distribution of Arrival Times of Air Shower Particles*, «Physical Review», 92, 1953, pp. 441-451.
- *Optics. Reading*, Boston (MA), Addison Wesley, 1957.
- *High-energy cosmic rays*, «Scientific American», 201, 5, 1959, pp. 135-146.
- With Riccardo Giacconi, *A Telescope for Soft X-ray Astronomy*, «Journal of Geophysical Research», 65, 1960, pp. 773-775.
- With Riccardo Giacconi, George W. Clark, *A Brief Review of Experimental and Theoretical Progress in X-ray Astronomy*, Cambridge (MA), Technical Note of American Science and Engineering, ASE-TN-49, 1960.
- With J. Linsley, L. Scarsi, *Extremely Energetic Cosmic-ray Event*, «Physical Review Letters», 6, 1961, pp. 485-486.
- With R. Giacconi, H. Gursky, F. Paolini, *Evidence for X-rays from Sources Outside of the Solar System*, «Physical Review Letters», 9, 1962, pp. 439-443.
- *Cosmic Rays*, New York, McGraw-Hill, 1964; traduzione italiana *I raggi cosmici*, Turin, Einaudi, 1971.
- With S. Olbert, *Introduction to the Physics of Space*, New York, McGraw-Hill, 1970.
- *Astronomia in raggi X. Lezioni tenute nel febbraio e marzo 1972*, Rome, Accademia nazionale dei lincei, 1974.
- *Momenti nella vita di uno scienziato*, Bologna, Zanichelli, 1987, English translation *Moments in the Life of a Scientist*, Cambridge, Cambridge University Press, 1990.

Archival sources

- American Institute of Physics. Niels Bohr Library & Archives. One Physics Ellipse, College Park (MD), *Emilio Segrè Visual Archives*, 25 photos of Bruno Rossi (Seventies).
- American Institute of Physics. Niels Bohr Library & Archives. One Physics Ellipse, College Park (MD), OH4849, oral history interview with Bruno Benedetto Rossi, by Richard Hirsch, 21 July 1976.
- ASUBo, *Archivio studenti*, f. 6996, «Rossi Bruno» (the thesis is missing).
- ASUFi, *Stati di servizio*, f. «Rossi Bruno B.» (from 1980; the personal file from 1928 was lost in the 1966 flood).
- ASUPd, *Professori di ruolo e incaricati cessati*, b. 5, f. 90, «Rossi Bruno».
- ASAUP, *Facoltà, Docenti*, b. 1558, f. «Rossi Bruno».
- ASAUP, *Facoltà, Carriera scolastica degli studenti*, b. 5475, f. «Laurea ad Honorem».
- BLO, MS, SPSL, b. 338/4, f. «Rossi Bruno», 1938-48.
- Centro internazionale di storia dello spazio e del tempo, Padua, *Carteggio Werner K. Heisenberg e Bruno Rossi* (not accessible).
- Dipartimento di fisica, Università la Sapienza di Roma, Amaldi Archives.
- MIT Libraries, Distinctive Collections, MC-0166, *Bruno Benedetto Rossi Papers, 1922-1990* <<https://archivesspace.mit.edu>>.
- NYPL, MAD, ECADFS, I.A. Grantees, b. 29, f. 6, «Rossi Bruno Benedetto», 1938-1944.
- Università di Palermo, Segreteria generale, Archivio di deposito, *Facoltà, Docenti*, b. «Rossi Bruno».

Bibliography

- Luisa Bonolis, *Bruno Rossi and the Racial Laws of Fascist Italy*, «Physics in Perspective», 13, 2011, pp. 58-90 <<https://www.luisabonolis.it>>.

- Ead., *Walther Bothe and Bruno Rossi. The Birth and Development of Coincidence Methods in Cosmic-ray Physics*, «American Journal of Physics», 79, 2011, pp. 1133-1150.
- Ead., *International Scientific Cooperation During the 1930s. Bruno Rossi and the Development of the Status of Cosmic Rays into a Branch of Physics*, «Annals of science», 71, 3, 2014, pp. 355-409.
- Ead., *From Cosmic Ray Physics to Cosmic Ray Astronomy: Bruno Rossi and the Opening of New Windows on the Universe*, *In Centenary of Cosmic Ray Discovery*, «Astroparticle Physics», 53, 2014, pp. 67-85.
- Ead., *Rossi Bruno*, in *Dizionario Biografico degli Italiani*, Rome, Istituto della Enciclopedia Italiana, 88, 2017 <<http://www.treccani.it>>.
- Roberto Casalbuni, Daniele Dominici, Massimo Mazzoni, Giuseppe Pelosi (ed.), *La fisica ad Arcetri: dalla nascita della regia università alle leggi razziali*, Florence, FUP, 2016.
- George W. Clark, *Bruno Benedetto Rossi, 13 April 1905 - 21 November 1993*, «Proceedings of the American Philosophical Society», 144, 3, 2000, pp. 329-341.
- Salvo D'Agostino, *Some Considerations on the Work of Bruno Rossi and the Florentine School of Physics in Research on Cosmic Rays*, «Annali dell'Istituto e Museo di storia della scienza di Firenze», 9, 2, 1984, pp. 69-83.
- Silvana Galdabini, Giuseppe Giuliani, *Physics in Italy Between 1900 and 1940: The Universities, Physicists, Funds, and Research*, «Historical Studies in Physical Sciences», 19, 1989, pp. 115-136.
- Giuseppe Gembillo, *Un carteggio inedito tra Werner K. Heisenberg e Bruno Rossi*, «Scienza e storia. Bollettino del Centro internazionale di storia dello spazio e del tempo», 9, 1993, pp. 113-122.
- Matteo Leone, *Camere, contatori, coincidenze. Le vie nuove aperte da Bruno Rossi e da Beppo Occhialini*, «Giornale di fisica della Società italiana di fisica», 50, 4, 2009, pp. 241-254.

- Matteo Leone, Angelo Mastroianni, Nicola Robotti, *Bruno Rossi and the Introduction of the Geiger-Müller Counter in Italian Physics: 1929-1934*, «Physis», XLII, 2, 2005, pp. 453-480.
- Lucia Orlando, *Physics in the 1930s: Jewish Physicists' Contribution to the Realization of the New Tasks of Physics in Italy*, «Historical Studies in the Physical and Biological Sciences», 29, 1, 1998, pp. 141-181.
- Alessandro Pascolini (ed.), *The Scientific Legacy of Bruno Rossi. A Scientific Colloquium in Honour of Bruno Rossi on the 100th Anniversary of his Birth*, Padua-Venice, September 16-17, 2005, Padua, Imprimenda, 2006 (with essays by George W. Clark, Alberto Bonetti, Livio Scarsi, Alan A. Watson, Claude R. Canizares, Roman Jackiw, Giulio Peruzzi, and Sofia Talas).
- Giulio Peruzzi, *Bruno Benedetto Rossi. Dal Colle di Galileo al MIT*, «Il Colle di Galileo», 4, 1, 2015, pp. 7-26.
- Wolfgang Saxon, *Bruno Rossi, 88, Pioneer in Cosmic Ray Research*, «New York Times», 24 November 1993, Section D, p. 19 <<https://www.nytimes.com>>.
- Livio Scarsi, *Bruno Rossi and the Group of Arcetri*, «International Journal of Modern Physics A: Particles & Fields; Gravitation; Cosmology; Nuclear Physics», 20, 29, 2005, pp. 6539-6544.
- Roger H. Stuewer, *The Age of Innocence: Nuclear Physics between the First and Second World Wars*, Oxford, Oxford University Press, 2018, pp. 376-380.
- Simone Turchetti, *Tracce e transiti: vite ed esperienze di studio dei fisici di Firenze durante e dopo il fascismo*, in Patrizia Guarnieri (ed.), *L'emigrazione intellettuale dall'Italia fascista. Studenti e studiosi ebrei dell'Università di Firenze in fuga all'estero*, Florence, FUP, 2019, pp. 53-73.

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