
Feature



Research in the Argentine Outback: The Health Quest of Salvador Mazza¹

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Few people today will recall the name of Salvador Mazza. That is understandable, for lasting fame typically depends on single accomplishments, and Mazza did no single thing that led to greatness. He was not a public health martyr; nor did he discover a grave illness, conquer a leading disease, or have his name attached to a leading health institution or vaccine.

But if you were engaged in medical research or public health during Argentina's years of prominence, between the two world wars, his name would have rung a bell. You might not have known him personally, for during most of this time Mazza was working at a rural outpost a thousand miles from Buenos Aires. But you might well have read one or another of his works on a score of subjects. You would have recognized him as a careful medical investigator with a towering command of several fields. And you might have wondered why he left the

sophisticated medical mecca of Buenos Aires to lavish his attentions on outlying regions where doctors were few and health care was problematic.

BEGINNINGS

One reason was that Salvador Mazza could identify personally with the problems of outlying regions. His childhood home was in the town of Rauch some 150 miles south of Buenos Aires. Rauch was close enough to the Argentine capital to attract some of the European immigrants flooding into the port of Buenos Aires. But it was also far enough away to suffer medical neglect.

Mazza, who was born there on 6 June 1886, was well positioned to gain a keen awareness of that neglect. His parents, who had immigrated from Sicily, were not rich; his father died when Salvador was only four; and while his mother's subsequent remarriage to a local government official presumably provided much-needed support, it did not suggest any fundamental change of status.

As a result, in early youth Mazza's life resembled that of many bright sons of immigrants striving to make good. At school—first a religious school taught by

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the Silesian fathers, then the National Central High School of the University of Buenos Aires, and finally the university itself—he worked hard, advanced by merit, and became known as a top scholar.

In his college years he took jobs to help defray expenses. Some of these, like his work as a French and Latin instructor at a private school near the university, had little later import. But one job, that of vaccination assistant at the Jenner Institute in Buenos Aires, helped shape his future. When Mazza worked there, during the first decade of this century, the Jenner Institute was pursuing a heady brew of medical research and other tasks directed at improving public health. And while Mazza's position at the institute was humble, he quickly grasped enough of the principles involved to apply them elsewhere.

Besides working for the institute, Mazza had taken a school vacation job at home in Rauch working as a public health inspector. Partly because of large-scale immigration, Rauch was then confronting outbreaks of smallpox, scarlet fever, and other ailments. Some of these outbreaks could have been prevented by vaccination, but the existing vaccination program was very weak. So in 1906 Mazza asked permission to organize a "disinfection office" at Rauch. That permission granted, Mazza proceeded to create a health facility where he applied his Jenner Institute training and took personal charge of vaccinating some 6,000 people. The next spring he entered medical school.

His first year at the University of Buenos Aires Medical School was a disaster. He contracted an infection, apparently in an operating theater, that attacked his arm, caused him to lose a year, and threatened his life. But Mazza survived, not much the worse for wear, and reentered the Medical School in 1907—where he maintained his good academic record while working as an assistant at two lab-

oratories, publishing his first article (on snake and spider bites), and serving briefly (during school vacation) as a surgeon third class on an Argentine naval transport carrying prisoners to the Tierra del Fuego settlement of Ushuaia.

He also put a lot of energy into the *Circulo Médico y Centro Estudiantes de Medicina* (Medical Circle and Medical Students' Center), a student organization that he variously served as secretary, directing council member, biomedical library and museum director, and journal editor. While all of these activities seem to have been reasonably successful, Mazza's journal management was an obvious hit. According to two who came later, "under Mazza the publication's scientific content acquired its greatest breadth" and "Mazza, with less funds, produced twice the pages."³ When he stepped down in 1910 his job was divided up among three people.

BUENOS AIRES, 1910–1920

Upon completing his medical studies in 1910, Mazza went to work for the National Health Department building a program designed to quarantine and screen immigrants for cholera. Today the job might be all but impossible. In 1910 it was possible because there was no air travel to contend with, travel in general was more limited, and most immigrants were entering Argentina at the port of Buenos Aires. But Europe was then in the throes of a cholera pandemic; Argentina's many immigrants were largely European; and the screening plans called for examination and temporary quarantining of them all.

Mazza did just that. He oversaw quick rebuilding of an abandoned island center and directed the screening and five-day

³A. Ivem, p. 13.

quarantining of 60,000 people. By international agreement, all immigrants were supposed to have been screened already at their ports of embarkation; even so, Mazza's workers found two asymptomatic carriers, one a regular immigrant who had not been screened for cholera before leaving Genoa and the other a stowaway from Naples. While there is no way of knowing just how effective the program was, detection of these cases suggests it worked largely as planned.

In any case, it was working well enough to impress the famed German bacteriologist and vaccine expert Rudolph Krause. Krause, who arrived in Buenos Aires in September 1913 to head the Argentine Health Department's Bacteriologic Institute, soon spotted Mazza's ability, had him transferred to the institute, and procured his collaboration on various projects.

Around this time collaboration of another sort began. In 1914 a bright young native of Rosario, Clorinda Brigada Razoni, accompanied her aunt to the clinic of a leading Buenos Aires physician, José Arce, where the aunt had come for surgery and convalescent care. Mazza was then manning the night shift at Arce's clinic, where the quiet gave him a good opportunity to write and where, when sleep threatened, it was his custom to pace the floors. His pacing kept Clorinda's aunt awake, and Clorinda complained to the authorities. Mazza came by in the morning to apologize, struck up an acquaintance with Clorinda, and began finding excuses for more visits. By the time the aunt was well enough to leave, he and Clorinda were engaged.

The marriage, which took place on 7 December 1914, proved fortunate for Mazza. Clorinda was no shrinking violet. She was well-educated, organized, and effective; and as time passed she became wholly devoted to her spouse and his endeavors. Indeed, they came to form such a close-knit team that in later years

it became impossible for those who knew them to speak of Mazza's work without remembering his wife.⁴

By the time they were married, Europe was at war. In those days Argentina, the most advanced Latin American nation of the time and one awash with Italian and Spanish immigrants, seemed almost a part of Europe. So it is not surprising that the Great War's unfolding struck a responsive chord and raised public interest in things martial.

Perhaps this explains why Salvador Mazza, who had no significant military background, chose to leave the Bacteriologic Institute in 1915 to work for the Armed Forces' Central Military Hospital in Buenos Aires. His initial job there, as head of bacteriology at the hospital's laboratory, kept him close to the university medical school, where he also served as a substitute professor of bacteriology.

In 1916 the War Ministry broadened Mazza's horizons by sending him to Europe. The official purpose of the trip was to study communicable disease prevention as practiced by the German and Austrian armies. But Mazza and his wife (Clorinda accompanied him on all his European travels) decided to explore more broadly, extended their stay into 1917, and visited several other countries. In the process, Mazza became fascinated by health-related engineering and briefly considered taking up study of that subject.

That would have been an unusual departure, because by then Mazza was a prominent microbiologist. Upon returning from Europe he was placed in charge of the Central Military Hospital Laboratory and all its affiliated regional laboratories. In 1918 he was made a delegate to the Second South American Conference on Health, Microbiology, and Pa-

⁴A. Cornejo, "Vida y obra de Salvador Mazza," p. 844.

thology in Rio de Janeiro. In 1919, following up earlier work with Krause on typhoid that produced what had become known as the "Krause-Mazza vaccine," he succeeded in making the world's first typhoid vaccine administered in a single dose. The vaccine, developed for the armed forces from 20 local strains of the *Salmonella typhi* disease agent, was not perfect. But it surpassed the multi-dose typhoid vaccines then available and was regarded in its day as a real breakthrough.

In 1920 he left the Military Hospital to become Laboratory Director of the Buenos Aires University Medical School's Clinical Hospital, and that same year he was named President of the Society of Health and Microbiology of Buenos Aires. By then Mazza, who was 33, had acquired a thorough working knowledge not only of bacteriology but also of pathologic anatomy, serology, immunology, epidemiology, and clinical work on infectious and parasitic diseases—enough to suggest he might toss off study of a somewhat more distant subject like engineering without much trouble. More to the point, by the end of 1920 he had reached the top of his profession; and so the real question was what he should do next.

ADVENTURES WITH CHARLES NICOLLE

That answer was some years coming. He stayed at the medical school until 1922, when the university sent him to Europe as its delegate to events commemorating the Pasteur Centenary in Strasbourg. The two-year trip, which took him to various parts of Europe and northern Africa, may have lasted longer than originally planned, for Mazza used it to become familiar with many institutions doing work related to his own.

One of these was the Pasteur Institute

in Tunis run by the noted French physician and future Nobel laureate Charles Nicolle. Mazza was impressed by Nicolle's brand of research and medicine in a public health backwater. Also, he and Nicolle found they had much in common. Both started out in bacteriology, possessed enormous curiosity, profoundly respected science, and favored an almost solitary research style. Beyond that, they both cared greatly about the sick, extended their work into many fields, had a tremendous capacity for work, and seemed perpetually in a hurry to get on with complex tasks. All this could hardly help emerge as they got acquainted; as a result, their acquaintance engendered a strong bond of friendship, long discussions, and some preliminary plans. Later, after Mazza returned home, he paved the way for Nicolle to visit Argentina. And from that visit arose a major project to which Mazza dedicated the remainder of his life.

In this period José Arce, the physician running the clinic where Mazza met his wife, began to provide key tactical support. By the time the Mazzas returned to Buenos Aires in 1924, Arce was Rector of Buenos Aires University. He was also Director of the Institute of Clinical Surgery affiliated with the medical school, and he invited Mazza to head the institute's laboratory. Mazza accepted the invitation and proceeded to improve the laboratory with such dispatch that he strongly impressed Arce, who came to take an almost paternal interest in his progress, and who from then on remained a lifelong friend.

Around this time Nicolle wrote Mazza expressing an interest in obtaining cultures of the disease agent *Leishmania braziliensis*. Nicolle was an expert on leishmaniasis, a mild to fatal recurring disease of the skin and mucous membranes caused by flagellated protozoans that infect animal reservoirs and are spread by the bites of sandflies. However, the only

Leishmania parasites available to Nicolle were "Old World" strains, while most of the severe cases in the Americas were being caused by the "New World" strain *L. braziliensis*. Nicolle wanted to study the latter agent; and even though *L. braziliensis* had not been isolated in Argentina, severe leishmaniasis cases had been reported in northern parts of the country, so seeking *L. braziliensis* there seemed reasonable.

Mazza therefore suggested that Nicolle be invited to visit Argentina for this purpose, and Arce agreed to help. Eventually—with the assistance of an enthusiastic chronicler that Mazza wrote of his own foreign travels—the National Health Department was convinced to sponsor the visit.

Nicolle, who arrived in October 1925, spent little time in Buenos Aires. His interests lay to the northwest. Besides seeking *L. braziliensis* there, he wanted to see the rural northwest province of Jujuy that Mazza had discussed with him in Tunis. Accordingly, the National Health Department arranged for him to visit this region in the company of two designated experts. Nicolle, however, insisted that Mazza accompany him by reason of his good French as well as their personal and scientific ties. The Health Department acceded to this request; and in short order, perhaps smiling slightly to themselves, the two departed for Jujuy.

From the standpoint of medical research and public health, the trip was a success. Nicolle and his party were cordially received by the governor of Jujuy; and at a health post in San Salvador de Jujuy, the principal town, material from a patient was cultured to yield the first isolate of *Leishmania braziliensis* ever obtained in Argentina.

Mazza and Nicolle also visited several other towns, got a first-hand look at the medical neglect of the northwest, and confirmed that San Salvador de Jujuy

would make a good site for a medical research and treatment center modeled after Nicolle's in Tunis.

To begin with, there was plenty of geographic diversity to permit health research in a wide range of climates; for although the climate at San Salvador de Jujuy's 4,200 feet was one of pleasant moderation, nearby territories included everything from tropical lowlands to snow-capped mountains. At the same time, medical research and knowledge of many local diseases were very limited. Local government enthusiasm for a medical center directed at regional health problems seemed strong. And it was important that such a center be located in the interior rather than in Buenos Aires so that, as Nicolle put it, "the metropolitan hodgepodge with its prevailing intrigues not stifle the purpose of the institution and divert its people from their task."⁵

Beyond that, Mazza was no stranger to the public health problems of poorly served areas. Rauch was such an area. His experience spearheading the vaccination program there suggested what could be done. And his recollections of that time must have made the northwest project seem a bit like coming home.

When Mazza and Nicolle returned to the Argentine capital, they told Arce about their hopes for a university-backed medical research center in Jujuy. Convinced the proposal was worthwhile, Arce proceeded to press for what would ultimately become known as the "Argentine Mission for Regional Pathology Studies" (*Misión de Estudios de Patología Regional Argentina*, or MEPR). A favorable Medical School endorsement was forthcoming, and on 16 April 1926 the University Council authorized Arce to execute the project, which he did.

⁵H. E. Castagnino, p. 14.

NORTHWEST TRAVELS, 1926–1929

Mazza threw himself into the task like a crusader. Even before Arce's proposals had been drafted, he took the thousand-mile trip to Jujuy. There, on 23 February 1926, he presided over a local physicians' meeting that brought into being an "Argentine Society of Northern Regional Pathology" loosely associated with MEPRRA that was directed at improving public health in the hinterlands. The next day he was in Salta overseeing formation of

the new society's local chapter in that province; a month later, on 28 March, he was doing the same thing in Tucumán Province; and the next day he was back in San Salvador de Jujuy for the first of the regional society's nine meetings.

Twenty-three works were presented at this meeting, four by Mazza alone, six by Mazza and collaborators, and thirteen by others. Mazza's contributions included the first finding anywhere of a dog naturally infected with the Chagas' disease agent *Trypanosoma cruzi*, the first adult case of Chagas' disease found in Argentina, and



Mazza seated at his microscope during a field trip in the Argentine Chaco.

the first indigenous cases of the infantile form of kala-azar (visceral leishmaniasis caused by *Leishmania donovani infantum*) ever recorded in the country.⁶

Mazza's university mandate called for him to visit MEPRA twice a year. By May 1926 he was again criss-crossing the northwest to do research, prepare for meetings, and encourage participation in the regional pathology society. In this way he built a head of steam for his organization, gained a commanding medical knowledge of the northwest, and founded pathology society chapters in all six northwest provinces.

By 1928 he had things well enough in hand to continue his foreign travels. That year he attended the International Congress of Tropical Medicine and Hygiene in Cairo, where Egypt's King Faud I conferred the Order of the Nile upon him. He followed this with another extended period of work and travel in Europe and Africa, returning to Argentina in mid-1929.

AT HOME IN JUJUY

At this point Mazza's northwest beachhead seemed secure but badly in need of more attention, and the MEPRA headquarters building in San Salvador de Jujuy was ready. So Mazza and his wife (they had no children) left Buenos Aires and set up permanent residence at MEPRA's new headquarters in Jujuy. Thus liberated from responsibilities in Buenos Aires, Mazza was free to strengthen his ties with local workers and to build a research and correspondence network that came to include several collaborators in

each of an array of provinces⁷ stretching from Argentina's northwest corner to the East Coast and roughly 1,200 miles southward, wrapping around the province of Buenos Aires and actually extending beyond Mazza's childhood home in Rauch.

By the time Mazza moved to Jujuy, the roughly annual meetings of the Regional Pathology Society had gained momentum. The third, held at Tucumán in July 1927, saw presentation of roughly 100 papers, among them 13 from New Orleans, Paris, Tunis, Arequipa, Montevideo, and Asunción—including one by future PAHO Director Fred L. Soper, who was then assigned by the Rockefeller Foundation to Asunción. Mazza, who spoke seven languages, did most of the translating himself. Beginning with the fourth meeting (Santiago del Estero, May 1928), attendance by delegates from neighboring countries became the norm. By the fifth (Jujuy, 1930), which coincided with the official inauguration of MEPRA and its new headquarters building, the list of international delegates had swelled to include a number of Brazil's leading medical researchers, and by 1932, when José Arce addressed Argentina's Fourth National Medical Congress in Buenos Aires, he was able to characterize Mazza's in-

⁶S. Mazza, "Observación de infección espontánea del perro por el *Schizotrypanum cruzi* (nota preliminar)"; S. Mazza, "Caso de esquizotripanosis humana observado en la ciudad de Jujuy"; and S. Mazza and J. Cornejo Arias, "Primeros casos de kala-azar infantil comprobados en el norte de la República."

⁷According to H.E. Castagnino and J. Alberto Aguirre (see bibliography), Mazza's principal collaborators, proceeding roughly north to south, included M.E. Jörg, V. Bernasconi, N. Alvarez Soto, A. Fiora, G. Paterson, and C. Undiano in Jujuy; A. Cornejo, J. Lovaglio, and R. Villagrán in Salta; H. Reyes Oribe in Formosa; E. Corsi, A. Señorans, R.S. Freire, and J. Braverman in El Chaco; A. Ruchelli in Catamarca; R. Cossio and C. Romaña in Tucumán; E. Canal Feijóo and C. Argañaraz in Santiago del Estero; C. Benítez in Corrientes; S. Díaz Malaver and R. Catalán in La Rioja; B. Parma, E. Zambra, and J. Romero Cereijo in Santa Fe; G. and R. Basso, C. Giménez, J. Kiel, and S. Miyara in Mendoza; F.L. Niño and S.E. Parodi in Buenos Aires; E. Castro Rendón in Neuquén; and F. Bertolini in Río Negro.

stitution as "currently the country's most important scientific production center."⁸

In the end the program worked because Mazza did not just do his job, he lived it. He personified both the pathology society and MEPRA. When money for worthwhile trips, meetings, or publications was not available, he gave it. (On one occasion, when a 1931 change in government temporarily abolished the MEPRA grant, Mazza personally funded the Mission for over nine months with money from his savings equivalent to about four years' salary.) He examined thousands of people free of charge, and if someone needed something but couldn't pay, he saw to its provision. He answered all of his technical correspondence personally, usually starting at six in the evening, and despite his administrative duties he continued to pursue his own research with vigor. Indeed, he eventually developed special long-distance research tools, including a railroad car outfitted as a mobile laboratory; and from the beginning the range of subjects covered was immense.

Undoubtedly, the person who helped him most in all this was Clorinda. Far more than an unpaid "honorary secretary," she was his manager, supply chief, personnel officer, corresponding secretary, librarian, photographer, and schedule manager all rolled into one.

Another mighty assist came from Mazza's own sensitivity and common sense. While he could be gruff and abrupt, especially when busy, he also understood human nature and was good gaining people's confidence. One tale told by Andrés Cornejo, a close associate, recalls the day in 1935 when he accompanied Mazza on a visit to a farm near Salta. Their aim was to collect blood samples

that could be examined for the Chagas' disease agent, *Trypanosoma cruzi*.

Before starting, Mazza had Cornejo change some bills into small coins and buy two boxes of chocolates. When they arrived, the farm looked deserted. Mazza said "it seems nobody lives here," whereupon a woman's head appeared. While Mazza engaged the woman in small talk a boy appeared, and Mazza at once opened his hand and gave him a coin and a chocolate. This brought forth the whole family.

He proceeded doling out a coin and chocolate to each child, and, after some conversation, to the adults as well. Mazza turned to one of the children and asked who was going to give him a drop of blood from his ear in return for two chocolates and two coins. The children looked at one another, the most alert said "me," and pretty soon everybody had agreed, samples were taken from the whole family, and the necessary information (each person's full name and address) was recorded. Mazza then asked if there were any dogs, cats, or domesticated wild animals on the farm. The grownups said no, but one child said he had a puppy and another said he had a kitten, both of which were brought forth to provide blood.

Mazza inquired about the woman's husband and was told he was in the field. Upon asking whether his health was good, Mazza got an equivocal response. Someone was sent to get him. When he arrived Mazza greeted him, explained he was a physician providing free services, and said he would need a drop of blood to help assess his condition. The man permitted a sample to be taken, and Mazza and Cornejo soon departed.

Three days later they returned as promised, and Mazza greeted everyone by name. The blood examinations showed that several family members had malaria and the father was infected with *T. cruzi*.

⁸A. Ivorn, p. 74.

Appropriate treatment and guidance were provided. The findings were later reported to the Ninth Meeting of the Argentine Society of Northern Regional Pathology held at Mendoza in October 1935 and were published in the proceedings of that meeting.

Mazza also used field work as a tool for alerting local doctors to hidden troubles. One such doctor was the future Argentine president Arturo Illia, who in the early 1930s was a young physician working at a small factory hospital in Cruz del Eje, Córdoba, that had 20 beds and few supplies. One day Salvador Mazza pulled into Cruz del Eje in his rail car laboratory, visited the hospital, and asked Illia whether any of the patients had brucellosis. Illia, who was unfamiliar with the symptoms, did not know what to say.

Illia later reported that they next visited the ward where,

. . . facing a worker presenting orchitis, he [Mazza] observed the patient, classified his case as "acute brucellosis," and extracted blood. We then went to the rail car, where he carried out reactions with the antigen and showed me the high titer: 1:4,000, thus providing me with a simultaneous lesson in research, diagnosis, and treatment.

We had lunch, he asked me if there were many triatomid bugs about, and we went to several huts where he collected those insects in a can. We then returned to the rail car, where he showed me *Trypanosoma cruzi* in those arthropods, giving me another lesson, this time about Chagas' disease, that I had known virtually by name only; he taught me about the etiology, acute and chronic forms . . . [and] I then understood [the reason for] the number of sudden deaths that one could only classify as "syncope."⁹

Mazza also formalized his instruction of local medical workers through short

⁹A. Ivern, pp. 98–99.

practical courses on microscopic diagnosis of the principal parasitic diseases in the area. These courses, which typically lasted less than a week, were given at different sites. The first, a relatively humble affair, was given at MEPRAs Headquarters in 1929. The eighth and last, given at the northeastern city of Corrientes in 1936, was attended by over 200 physicians.

To report what they were doing, Mazza and his colleagues created a flood of articles for learned medical publications. Many of these appeared under Mazza's name. In 1930, the year after moving to Jujuy, he authored or coauthored 30; and in 1935, a peak year, he authored or coauthored 69. Considering only the 1926–1936 period, Mazza and his coauthors produced 273 articles on an array of subjects ranging from blastomycosis to malarious gangrene.

These articles amount to an almost daily record of what MEPRAs and its collaborators did. There is no way of telling precisely how many of these articles Mazza wrote himself; but it seems clear he was the only one who could have inspired, directed, and controlled the torrent of diverse information being reported; for within the collection of fields involved, few were as diverse as Mazza. For instance, any number of qualified workers around the world might have felt comfortable presenting their learned colleagues with an article on acute lymphoid leukemia in 1930.¹⁰ But few except Mazza would have felt comfortable combining this in the same year with scholarly articles on drug treatment of New World leishmaniasis, malaria symptomatology,

¹⁰S. Mazza, C. Arias Aranda, "Leucemia aguda linfocítica." Paper presented at the Sixth Meeting of the Argentine Society of Northern Regional Pathology held in Salta on 29 and 30 September and 1 October 1930. Cited in Universidad de Buenos Aires, 1945.



Convincing rural folk to give medical specimens required a deft touch. Here Mazza extracts blood for a thick smear from the earlobe of a native villager while a coworker, Rafael Villagrán, looks on.



Mazza palpating the spleen of a child; this diagnostic step led to his first discovery of a case of visceral leishmaniasis in Argentina.

vaginal moniliasis, hydatidosis of the neck, vaccine contamination in Jujuy, and arachnidism produced by a spider belonging to the genus *Latrodectus*.¹¹ It was as if Mazza had been born fifty years earlier, when medical knowledge was more limited and exploration of diverse medical fields by single researchers, if not common, was closer to the norm.

CHAGAS' DISEASE

Despite Mazza's wide-ranging interests, as the years at Jujuy passed he came to focus increasingly on one ailment: Chagas' disease. This well-hidden killer, discovered by the Brazilian health pioneer Carlos Chagas in 1909,¹² is now recognized as a major scourge of the Americas. Caused by the protozoan parasite *Trypanosoma cruzi*, it afflicts both people and various domesticated animals and is spread by the nocturnal bites of blood-sucking triatomid bugs. Fatal perhaps 5% of the time, it infects roughly 8 million people in this hemisphere (an estimated 2 million in Argentina alone) and threatens some 40 million more.

Mazza had no way of grasping the problem's true scope in his day. But as

time passed he became aware that the Chagas' disease agent *T. cruzi*, present in his area as well as in other parts of Argentina, was doing serious harm. And he became increasingly frustrated by the medical community's failure to recognize this fact.

That failure is easy to understand. To begin with, detecting the disease was tricky. The acute phase often produced no obvious symptoms or mimicked other ailments; and the chronic symptoms pointed out by Carlos Chagas (cardiac arrhythmias, heart failure, nervous system disorders, and edema) were all common problems readily attributed to other things. Besides, one could argue convincingly that variations in *T. cruzi* strains severely limited the geographic areas where *T. cruzi* infections were doing any harm; and few if any of the victims, typically poor and illiterate rural folk, were in any position to understand the problem, much less complain about it or make their voices heard.

For all these reasons, after Chagas' discovery and the blaze of publicity that followed, physicians became skeptical. In 1914 Rosembusch and Maggio, a pair of Argentine researchers working under Rudolf Krause, said they had been unable to find any *T. cruzi* among people in Argentina, even though they found plentiful *T. cruzi* in vector bugs. The influential Krause, who was then Mazza's chief at the Bacteriologic Institute, signed his name to the published findings. And this, combined with confused data and growing doubts in Brazil and elsewhere, gave rise to a long period in which Chagas' disease was virtually ignored, despite continued efforts by Chagas himself to correct misconceptions and set the matter right.

In truth, Chagas was not in a good position. Having discovered the disease, he was considered an interested party. Moreover, he had become a leading health

¹¹S. Mazza, C. Arias Aranda, "Ensayos de tratamiento de la leishmaniosis americana por la 'Fudadina'"; S. Mazza, C. Arias Aranda, "Nuevo caso de aracnoidismo por *Latrodectus*"; S. Mazza, C. Pasquini López, "Micetoma podal actinomicótico observado en Tucumán"; S. Mazza, G. Puló, J. Costas, H. Quintana, R. Alvarado, "Sobre gangrenas palúdicas"; S. Mazza, A. Ruchelli, "Consideraciones sobre un caso de hidatidosis del cuello comprobado en Catamarca"; S. Mazza, M. Sylvester, "Hallazgo de *Setaria labiatopapillosa* (Alessandri 1838) en vacunos de Jujuy." Papers presented at the Sixth Meeting of the Argentine Society of Northern Regional Pathology held in Salta on 29 and 30 September and 1 October 1930. Cited in Universidad de Buenos Aires, 1945.

¹²See J. Leonard, "Carlos Chagas, health pioneer of the Brazilian backlands," *Bull Pan Am Health Organ*, 1990;24(2):226-39.

administrator, head of the Oswaldo Cruz Institute in Rio de Janeiro, a post that removed him from the field and gave him little time to do his own research.

But Mazza had no personal axe to grind. From 1926 onward he was perpetually in the field. Despite a blizzard of other duties, he was continually doing personal research. And his work placed him in close contact with the communicable disease problems of rural folk, to such an extent that he was generally recognized as the great Argentine expert on such matters. So he was in a good position to delve into what was happening and tell others what he found.

In 1926 Mazza reported finding the fifth human case (the first in an adult) of *T. cruzi* infection in Argentina.¹³ And in 1927, when Mazza and his coworkers diagnosed Chagas' disease in a five-year-old girl with overt symptoms, they gave the matter a good airing.¹⁴

For some years after that, however, not much happened. MEPRA merely reported finding the parasite in armadillos and opossums, and Mazza directed most of his attention elsewhere. Then, in 1932, MEPRA found another pediatric case in Santa Fé; in 1933 it found another; and, as Mazza reported,

Toward the end of 1933, MEPRA found in the province of Santa Fé a one-year-old child with schizotrypanosis who died in a short time and whose postmortem, the first done in this country on the acute form of Chagas' disease, enabled us to find . . . signs of severe "Chagas' myocarditis."¹⁵

These cases provided plenty of incentive to look further. So Mazza began

concentrating his efforts on the ailment; MEPRA uncovered many other acute cases before Carlos Chagas' death in November 1934; and when the Argentine Society of Regional Pathology held a meeting in Mendoza to honor Chagas' memory, 35 additional cases were described.

Mazza did not stop there. From 1935 onward he applied a lot of his own efforts and those of his organizations to detecting, treating, and reporting Chagas' disease cases. In 1935 he wrote or co-authored 31 articles on the subject; over the ensuing decade he issued an average of 17 such articles a year; and in the end he and MEPRA registered some 1,400 cases of the disease.

All this had the desired effect. In short, Mazza succeeded in showing that Chagas' disease was a major threat, awoke the Argentine medical community to the true nature of the ailment, and saw that Carlos Chagas' great medical discovery received the thoroughgoing international attention it deserved. As one Brazilian investigator noted, "It was . . . Argentina that undertook by itself, through the voice of Mazza and his collaborators, the rehabilitation of the great work of Carlos Chagas."¹⁶ In the end, it was enough for some to suggest that the ailment should be called "Chagas-Mazza disease"; and while this name never became common parlance, it is still heard occasionally as a faint echo of Mazza's work.

THE 1940s

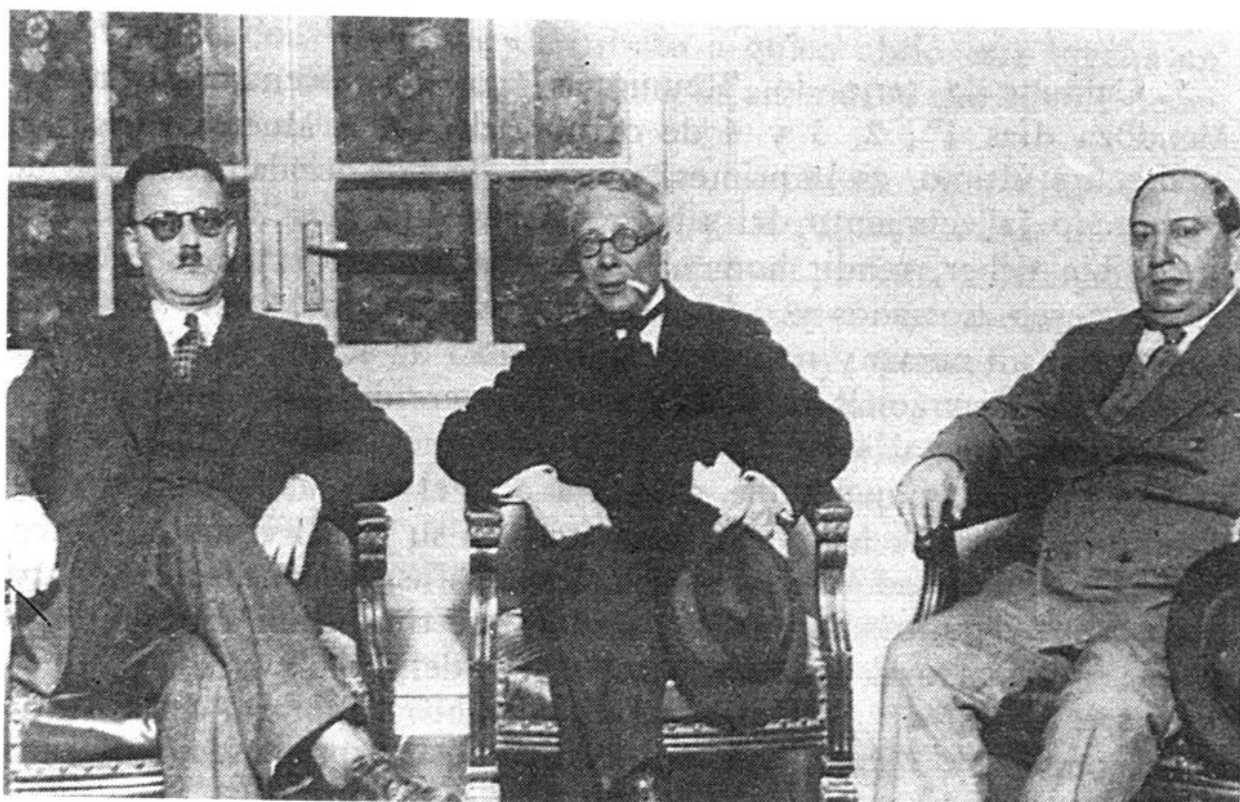
By then the 1940s had begun and Mazza's energies were waning. Since 1937 he had known that he had a heart condition, and in 1944 he suffered an episode of retinal thrombosis that robbed him of most of the vision in one eye. In 1944 he had

¹³S. Mazza, "Caso de esquizotripanosis humana observado en la ciudad de Jujuy," *Rev Asoc Argent Biol*, 1926;2:79-87.

¹⁴Salvador Mazza, "Chagas' disease in the Argentine Republic," p. 290.

¹⁵*Ibid.*, p. 291.

¹⁶O. de Magalhaes, *Mem Inst Ezequiel Dias (Belo Horizonte)*, 1942;4, as quoted in A. Ivern, p. 122.



Mazza with Evandro Chagas (left), son of the late Carlos Chagas who discovered Chagas' disease. The ninth meeting of the Regional Pathology Society, held in Mendoza in 1935, was dedicated to the memory of Carlos Chagas. Seated to the right of Mazza is Dr. J. Echeverri Gainza, President of the Medical Society of Mendoza.

four periodic electrocardiograms taken; and the next year he made arrangements to move MEPRA back to Buenos Aires, a move that was completed in June 1946.

He had been made a member of Brazil's National Academy of Medicine, and in September 1946 he went to Rio de Janeiro as a leading participant in the First Inter-American Congress of Medicine sponsored by that body. He was also recognized as a leading expert on brucellosis, and so the next month he flew to Mexico City with Clorinda to attend a five-day medical conference on that subject. When the conference ended on 2 November, he went to Nuevo León with a group of researchers at the Mexican Government's behest to conduct demonstrative studies on Chagas' disease. From Nuevo León he went to Monterrey to speak on his own experience; and it

was there, at 9 p.m. on 7 November 1946, that he died suddenly of heart failure at the age of 60. Whether or not "the day before his death he worked at a microscope for seven hours,"¹⁷ it seems clear that Salvador Mazza died suddenly in the midst of unrelenting activity, the way he would have wished.

MEPRA's end was slower and more painful. Shorn of its leader and confronting the "metropolitan hodgepodge" to which Nicolle had prophetically referred, the Mission underwent a series of administrative changes but never regained a strong sense of direction. In the process it lost university support, experienced a slow decline, and after more than a dec-

¹⁷Unidentified news report cited in A. Ivern, p. 7.

ade in the twilight closed its doors for the last time in 1958.

Despite MEPRA's demise, Mazza clearly changed the face of "regional" medicine in Argentina. As Andrés Cornejo of Salta put it,

We have often heard it said that Mazza left neither school nor successors. Are "school and successors" not embodied in the fact that today every doctor knows leishmaniasis, Chagas' disease, brucellosis, mycosis, etc.? Today we doctors in the city of Salta do not see cases of leishmaniasis or mycetomas, because the doctors in the endemic zones have already treated them themselves, and if cases come to us it is because they are sent to us by those doctors, already diagnosed, to be treated by us with better means.¹⁸

Beyond that, Mazza left the international medical community aware of what he had done and sensitized to a number of significant health problems. The most visible signs of this legacy in the years immediately following his death were numerous testimonial acts and dedications extending as far north as Wisconsin. Of these, the most notable came from the Oswaldo Cruz Institute during the First Pan American Meeting on Chagas' Disease held in Tucumán, Salta, and Jujuy in July 1949. On that occasion the Brazilian delegation gave Clorinda a scroll honoring her husband that was signed by all 76 members of the institute, and upon Mazza's tomb it placed a plaque from the institute bearing his likeness and an appropriate inscription. It was apt remembrance for an immigrants' son from Rauch who rose by dint of his driving intellect and who showed what one motivated person could do to reveal medical hazards, inspire others, and improve health in rural zones.

¹⁸A. Cornejo, *Vida y obra de Salvador Mazza*, p. 854.

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