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THE LONG POSTWAR AND THE POLITICS OF PENICILLIN:
EARLY CIRCULATION AND SMUGGLING IN SPAIN, 1944–1954

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SUMMARY

SMUGGLING AND THE POSTWAR POLITICS OF PENICILLIN

In this paper I explore the early circulation of penicillin. I review the early distribution in Spain of a scarce product, reflect on the available sources about the illegal penicillin trade and discuss some cases of smuggling. I argue the early distribution of penicillin involved time and geography, a particular chronology of post Second World War geopolitics. Penicillin practices and experiences belong to this period, in a dictatorship that tolerated smuggling and illegal trade of other products, some, like penicillin, produced in neighbouring countries. As a commodity that crossed borders, penicillin, transiting between the law and hidden trade, between countries and social domains – between war fronts and from a war front to an urban site to be sold – reveals practices of the early years of prosperity in the 1950s. These transits were permanent tests of a society based on taxes and exchanges, law and bureaucracy, control, discipline and the creation of standards.

During the night of 17 October 1950, close to the village of San Fernando, near Cádiz, members of the *Guardia Civil* spotted a number of men with loaded donkeys in the *Teresa* salt mine and ordered them to stop. The men were salt miners transporting tobacco and penicillin. Suspecting there would be more parcels in the surrounding

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areas, the police discovered additional amounts of both penicillin and tobacco at the *Teresa* and at another salt mine close by, *Santa Cruz*. The *caballería* (donkeys) had been carrying the goods: the *Guardia Civil* confiscated both donkeys and merchandise, and the riders were interrogated. The arrested salt miners reported that the merchandise belonged to a man from Tangier, in the north of Morocco, who had negotiated with one of them. He had hired some of his workmates who, needing money for their families, had agreed to help, and they had used some of the mining company's donkeys to bring the goods to a transportation vehicle. They claimed to be unaware of the final destination, and believed the mine owner did not know about the deal. The contraband consisted of nearly 40,000 packets of cigarettes and 5,600 flasks of Merck penicillin G, each containing 200,000 units¹. The penicillin, handed over to the Customs Administration in Cádiz, makes no further appearance in the report. The tobacco, however, was considered a major confiscation, and the case was successfully tried almost four years later at the Cádiz Court of Smuggling and Fraud. This narration is included in one of the earliest reports I have found in the Spanish Court of Smuggling and Fraud archives in which penicillin was involved. It is also one of the few large cases of smuggling, according to the classification made by the Court, which I could find. It includes a set of unknowns in the declarations of those involved: they apparently had no knowledge of who had brought the merchandise to the place they found it, where it had come from, or where it was supposed to be going. Drug flasks, being light, could be transported easily from one place to another in small amounts, and penicillin, being in great demand, provided a lucrative business for dealers and enabled the salt miners in Cádiz to earn some extra money. Not only were the major dealers never found, they were not even referred to in the report. The salt mining firms were declared not guilty, their lawyer having argued they were unaware of any smuggling². Although illegally brought to the place it was intercepted by the *Guardia Civil*,

the smuggled penicillin was clearly identified as being manufactured, bottled and marketed by Merck: it was US penicillin.

It had been six years earlier, in March 1944, when reports had declared penicillin had been used for the first time in Spain ‘with magnificent results.’ A mining engineer in La Coruña – on the Northwest coast of Spain – who was suffering from acute septicaemia had been injected with the drug: ‘The first injection was applied yesterday at 11 am, when he had a temperature of 39 degrees...today before a second dose he was at 37.’ After this second dose, the patient clearly improved³. The penicillin had come from Gibraltar, the British harbour on the South coast of Spain, to which it had arrived from an ‘African port occupied by the Allies’⁴. According to the report published by the Madrid daily *Abc*, the clinician treating the patient in hospital ‘claimed to know nothing of the deals made so that this famous pharmaceutical could be obtained’.

These six years of officially unknown paths by which penicillin could be supplied – of its illegal trade – suggest how long the post-war lasted for penicillin distribution across Spanish borders: that is, if we accept postwar as a term that embodies transits in its meaning, a transit to stable, regulated and maybe even standardised certainties of social and political life.

The early penicillin that came into Spain, the public fame of its therapeutic capacity, the methods for obtaining and purifying it and the protocols for its clinical use composed a set of material, social and rhetorical practices embedded in the early days of the Franco dictatorship and the years immediately after the Second World War. In the early legal circulation trajectory of the new drug, an interaction took place between Francoist policies and those of the Allies: while protracted negotiations would lead to penicillin being officially transported from the US to Madrid, permit manufacturing in Spain and provide the protocols for its use, penicillin was also unofficially distributed through illegal trade.

To follow such trajectories, newspaper reports are an important reference: although censorship ensured the rhetoric of the dictatorship was embodied in news narratives, the set of events at least provide a chronology and reference for the legal measures adopted by the government. Even when reported on by the strictly controlled daily press, penicillin and the antibiotics that came slightly later became a resistance to the power of the dictatorship as they acquired a life of their own: both at the bedside and on the black market, penicillin worked efficiently. The drug was able to work thanks to its non-regulated, non-controlled availability. At the same time, until penicillin was sold in pharmacies, it was subject to an intense and vast state bureaucracy: early legal batches were strictly regulated by a set of norms that placed the first humanitarian parcels from the US at the service of the political bureaucracy. Only from 1950 onwards did penicillin become a product sold to and for everyone. This bureaucracy surrounding a scarce commodity became the basis upon which smuggling and illegal trade underwent a development similar to that of other scarce products of the time. Coffee and cigarettes from abroad had been among the most widely circulated goods in earlier times, while basic foodstuffs were traded in the black market during the entire decade that food rationing cards were in force⁵.

In this paper I explore the early circulation of penicillin. In the first part, I review the early distribution in Spain of a scarce product that belonged to the Second World War. I follow this by reflecting on the available sources about the illegal penicillin trade and discuss some cases of smuggling. Ultimately, I argue that the early distribution of penicillin involved time and geography, a particular chronology of post Second World War geopolitics. Penicillin practices and experiences belong to this specific political period, in a Spain governed by a dictatorship that tolerated the smuggling and illegal trade of other products, some, as penicillin was, manufactured in neighbouring countries, in a neighbourhood that was both geographical and political: in the West⁶.

The early circulation of a scarce product: from the war front

Spain shared the heroic reception of penicillin with other European countries, at least from 1944, when penicillin is first mentioned in Spanish archival material and newspapers⁷. This heroic representation was in tune with the devastation left by the wars, the poverty of the population at the end of the Spanish Civil War (1936–1939) and during the first decade of the Franco dictatorship, from October 1939 onwards. Infections had increased during the war, particularly those found in wounds and the sexually transmitted infections which prevailed among the troops. Techniques for treating war wounds had improved; among these improvements was a method for the treatment of broken bones, invented by the Spanish orthopaedic surgeon, Josep Trueta⁸. Blood transfusion techniques were also developed and practiced in the Spanish war, and again a Spanish clinician from Barcelona was one of the pioneers at the front: Frederic Duran i Jorda⁹. The Spanish Civil War, as a constrained environment for invention and experiments, produced a set of technical and medical improvements embedded in the war itself, despite the dismantling of the public health system. The Spanish Civil War was a period of urgency; it revolved around the solving of problems related to the state of emergency caused by the Spanish war itself.

Circulation of the amazing effects of the new drug involved travels through time and place¹⁰. Rumours of the wondrous therapeutic success of penicillin use spread easily during the Second World War, especially among physicians and researchers: during the Spanish post-war, all throughout the Second World War and until the early 1950s, during this long decade under the repressive policies of the early days of the Franco dictatorship. Food ration cards remained. Death rates due to infection, which had decreased during the early 1930s, increased not only during the Spanish civil war but also throughout the first half of the 1940s. Only in 1946, when health care remained

inadequate, did infections cease to be the number one cause of death in Spain¹¹. During this decade, known as the decade of hunger, the precariousness of urban life was also demonstrated by the insalubrious water, which added to the risk of infection¹². On top of the devastating malnutrition, a high prevalence of infections exacerbated the misery of life¹³.

The aforementioned Trueta, who soon went into exile and lived in Britain from then on, was among the first witnesses in Oxford of the anti-infectious action of early samples of impure penicillin, as he himself recounted, and he would contribute to disseminating information about the wonders of penicillin when writing to his colleagues who remained in Barcelona after the war¹⁴. The effects of penicillin would be experienced later by the troops at the front. It took time for penicillin from the pharmaceutical manufacturers in the US and UK to reach the wounded. After the initial report in 1940, by Howard Florey, Ernst Chain and Norman Heatley, information about culturing methods, how to make *Penicillium* grow and the kind of culture vessels to be used was published and circulated. Microbiologists all over Europe attempted to culture the mould in Petri dishes¹⁵.

Penicillin, its uses and the distribution policy of a substance that had become a marvel by curing old, well-known deadly infections, became associated with the Second World War during the early days of this medical cure. It was a medicine of and for the needs of war; a war weapon that would be useful, according to Alfred Newton Richards, director of the US council that co-ordinated the war effort in medical research, for 'military medicine.' The year 1943 remains a crucial year in the origins of penicillin's public fame. According to Richards, due to the scant penicillin then available, it should mainly be used to attend to the needs of the US Army overseas and the war wounds of soldiers coming back from the Pacific front¹⁶.

In August 1943, the Committee on Chemotherapy of the US National Research Council, chaired by Chester Keefer, published its first re-

port on the treatment of 500 patients with penicillin manufactured by Merck, Squibb and Pfizer. They investigated the infections most likely to be suffered by the Army and those resistant to sulphonamides, and concluded that the antimicrobial drug was 'notably potent.' African campaigns became the scenario for one of the first successful infection treatments with penicillin on the Allied war front in the summer of 1943. Together with Brigadier Hugh Cairns, Howard Florey submitted a long report that was published in October on the effects of penicillin at the African Allied war front: 'Because the supply was scanty and likely to be so for some time, the emphasis was on local, rather than systemic, administration, e.g., as a powder or in a solution'¹⁷.

Early distribution

Exchanges between the Allied forces and the German army should be considered one of the earliest paths for disseminating news about the yellow powder, penicillin in its impure state. When taken prisoner in places where Allied Army physicians had penicillin, German military physicians, even if only supplied with small quantities, had the chance to witness the phenomenon. The war itself – its powerful propaganda, and the Allied armies – was the drug's early stage.

The British penicillin allocated to the African front could well have been the mysterious origin of the drug used to treat the Spanish mining engineer in March 1944. The newspaper reported that it came from an 'African port occupied by the allies': probably either Oran or Algiers, although no further details were given¹⁸. It's unknown or secret origin suggest it was illegally obtained, or at least that it was not registered as a result of any agreement or humanitarian donation, but was rather from a source outside regulated trade. The same day, according to news reports, another sample, preserved in ice and apparently obtained by legal means from Brazil, was brought by the Portuguese ambassador himself through the Brazilian Embassy

to treat a young girl. Her father and aunt appeared in a photograph published by a Madrid daily with the parcel containing twelve 5ml ampoules of a caramel-coloured oil¹⁹. This penicillin sample proved to be extremely expensive, calculated at around \$15,000 on the basis of the four consecutive flights required for its transportation, apparently from the Oswaldo Cruz Institute near Rio de Janeiro²⁰. After some promising improvement, the girl's condition deteriorated and an attempt was made to retrieve penicillin from her urine, a practice previously performed in Oxford during the first testing of minute samples by Howard and Ethel Florey²¹. Treatment with penicillin was not always successful; the wife of a well-known bullfighter had died that April following treatment, at the age of thirty-two²². At the same time, a clinician in Barcelona received a parcel 'from a Cuban laboratory with two million Oxford units', which he used to treat two patients a month later, without any definitive results²³. Samples of the mould *Penicillium notatum* were also circulating at that time in Delft (the Netherlands), during the Nazi occupation²⁴, and in Barcelona, a medical researcher who received a mould sample from the Lister Institute in London reported its properties in laboratory animals at the Academy of Medicine in April 1944²⁵.

The first *humanitarian* parcel, as it was called in the report, of the antimicrobial arrived at Madrid airport from the US via Lisbon in September 1944. It was the first of a series of deliveries sent by the US, 'despite the huge demand for civil uses and on the war front', on the basis of an agreement between the Spanish government and the US Embassy, according to the Madrid daily, *Abc*, and Barcelona daily, *La Vanguardia*²⁶. By that time, Keefer's committee had published on the promising results obtained, based on his 'personal observation of a considerable number of patients: penicillin was non-toxic, would save many lives and reduce many days of acute and chronic illness'²⁷. Over 2,700 hospitals in the US received monthly supplies of the drug that year despite severe controls on distribution being in

place; it was not until December 1944 that US production met military requirements and was able to address civilian needs while production was still increasing. According to Gladys Hobby's historical reconstruction, the US war production board was allowing penicillin to be sold 'through normal trade channels' by early 1945²⁸.

The Franco government and its practices regarding batches received, embedded penicillin in state bureaucracy: immediately following its arrival at Madrid airport, parcels containing vials of the new drug were put in a refrigerator to await all the formalities in force regarding imports²⁹. In November 1944, the National Health Board (Consejo Nacional de Sanidad) created a specific committee for its distribution, known as *Comisión para el reparto de la penicilina en España* (Commission for the Distribution of Penicillin in Spain) and norms for the distribution of the drug were approved in November³⁰. Chaired by clinician and medical researcher, Carlos Jiménez Díaz, the committee consisted of clinicians and health administrators, among them Jiménez Díaz's former collaborator, endocrinologist Eduardo Ortiz de Landázuri. The commission reported on the reception of the humanitarian batches in December 1944³¹. Jiménez Díaz, while on a seaside holiday that summer, had been diagnosed as suffering pneumonia and at the suggestion of his collaborators, colleagues and family, was successfully treated using penicillin. The drug was bought at a downtown pub in Madrid, where it was known to be sold on *estraperlo* (black market) at a very high price. As pubs had refrigerators, they were convenient places to store penicillin while waiting for clients. Jiménez Díaz had no refrigerator; therefore the drug was transported to his bed in ice bags every day. By that time, health authorities had stated that they had no penicillin at all³². Once supplies of penicillin began to arrive, the new drug, being scarce and an additional product under government control, reinforced the power of the dictatorship. According to the regulations on penicillin distribution, a detailed clinical report including analy-

sis and diagnostic tests of every patient who applied for it had to be supplied. Once the *Comisión* had approved penicillin treatment, and the supply had been authorised by the health authorities, physicians were required to report to the committee daily³³. Any remaining units had to be returned for use in charity medical centres – with every decision taken by the general director of health³⁴.

The public, worldwide fame of the drug was dramatically paraded after D-Day when the US army distributed the drug among troops on the European front. Political leadership and an agenda toward industrial development for health care travelled attached to every ampoule, and set the foundation for ambitions to manufacture it in every European country. In September 1945, Spain was receiving penicillin under the control of the National Health Board from ten of the twenty firms that produced it, according to a news report. The price was approximately thirty pesetas per ampoule, so a course of treatment was expensive, costing around 300 pesetas. Two-thousand cases had been treated and reported to the Committee with satisfactory and impressive results. Restrictions were placed on its use to avoid price increases, and priority was decided according to patients' needs. Treatment results were reported to the US Embassy, which proceeded to send them to the US Commission in charge of collecting results, according to a statement by the secretary of the committee, whose name is not given in the news report³⁵. In addition to being scarce, penicillin distribution was strictly controlled by the state, which created a rationing system and sold it at a fixed price. Rationing, scarcity and bureaucracy were the basis upon which a black market of the new drug emerged³⁶.

A silent history

From the arrival of the first humanitarian batch onwards, news about penicillin, abstracts of publications about its manufacture and use, and medical reports on the treatment of infections were published in

Spanish medical journals. Some articles reporting successful treatments mentioned the fact that how these patients obtained the penicillin was unknown, thus reflecting, on the one hand, its scarcity and, on the other, the existence of illegal trade in the renowned drug. The scarcity of the drug contributed to its legendary status: it was not free – not everyone who needed it was able to obtain it – and trading was illegal. In regard to the foodstuff black market during the 1940 and early 1950s, Christiansen has argued this was the norm, not only in Spain but throughout Europe, both in democratic nations and dictatorships. A combination of a state monopoly which bought a drug at fixed prices and a consumer rationing system explains the emergence of the black market³⁷. Demand for penicillin in Spain outstripped supply until two Spanish factories commenced production. A black market in this drug and, slightly later, in streptomycin – the effects of which against tuberculosis were even more astonishing – is often mentioned in both fact and fiction from this time. Tales of buying penicillin in a well-known Madrid pub and in the fishing port of a seaside town, to cite but two examples, appear in novels, memoirs and medical reports³⁸. When legally obtained, penicillin was scarce; and when illegally bought, it was expensive. Either scarce or expensive, it was a business opportunity for those involved at any level, and in any way, in its trade. Scarcity made access to it not only difficult to achieve but also an anxiously needed and desired promise of healing. The controllers of this life-giving medicine, as Bud calls penicillin,³⁹ received dramatic requests, the majority impossible to fulfil through the contemporary legal procedures. The immense expectations created by its success made it a highly desired medicine. During this period of the long postwar, medical practice and clinical certainties regarding cures by the new drugs, meant health care systems and the pharmaceutical industry were major players in the reconstruction of those Western societies devastated by wars and their consequences – Spain having suffered both the Civil War and

the Second World War – and contributed to a modern world full of medicines⁴⁰.

By the end of the Second World War, when US and, soon after, British firms were producing enough to cover the needs of an increasing demand, penicillin began to circulate more widely. Spanish authorities, however, maintained tight control of the apparently scarce amount of penicillin received from US firms and distributed by the *Comisión*, while a special prosecutor was created by Franco in 1940, the *Fiscalía de Tasas*, to deal with the black market. The relatively limited measures taken against the black market, however, suggest its existence was largely accepted⁴¹.

‘Nothing can be compared to watching how fever decreases and the gravest symptoms of septicaemia, even staphylococcal which was inexorably deadly, subside a few hours after beginning penicillin injections’⁴². These words by the Spanish clinician, Gregorio Marañón, appeared in the foreword of one of the first books on penicillin, published in Madrid in 1945, and show the expectations penicillin faced, its wonders perceived as miraculous. It was almost as miraculous to actually obtain some doses.

The growing demand for penicillin, and its scarcity despite the notorious black market trade of the drug, became evident to the Spanish government in September 1946. Rather than increase expenditure for buying penicillin from abroad, a report recommended promoting manufacture of the drug in Spain⁴³. Authorities at the Ministry of Industry discussed the proposal in January 1947; a proposal to manufacture penicillin in Spain was received in June from the Danish company, Loevens, but was rejected in July, as if there was no urgency to produce it⁴⁴.

In 1948, the official newsreel (known as *No-Do*) of Alexander Fleming’s visit to Barcelona and Madrid celebrated the public fame of penicillin by showing the fervour with which the British researcher was received, at a time when news of its curative effects was widespread. The exhi-

bition of official newsreel documentaries was compulsory before the showing of a film, and they were the main space for the Franco regime to publicise its ideology, practices and plans. In addition to being an advertising campaign for penicillin, the filmed report of Fleming's visit could be seen as a powerful tool in support of the manufacturing requests already on the table at the Ministry of Industry.

On 1 September 1948, the Spanish government took control of penicillin manufacturing, including it in their industrial priorities, and in August the following year, authorised two firms to manufacture penicillin in Spain. The firms signed contracts with US firms – one with Merck (Rahway), the other with Schenley – enabling them to use their manufacturing methods under license. Both firms were private, but the state controlled, by law, their financial and foreign relations activity⁴⁵.

Penicillin was initially received by these two firms in bulk, and by the end of 1950 one had bottled half a million flasks of the drug⁴⁶. This penicillin was in the pharmacies and hospitals by the following year. The 1940s were over and so were the autarchy and ration cards; smugglers, who until then had at least partly been tolerated, would now be prosecuted.

A transition had taken place: from being a scarce remedy in the 1940s, penicillin had become a cultural icon in the 1950s associated with industrial modernisation and prosperity (on the British case, see Bud 2008). Modernity at that time was also compatible with smuggling, illegal trade and, more broadly, the permissive practices of the authorities toward this illegal trade in times of scarcity. Penicillin meant business as well as therapy. Its success in treating many kinds of infections kept the miracle of the anti-infection drug alive.

Smuggling: denouncing and punishing illegal trade

The fact that the public were aware of the smuggling of penicillin and, soon after, other antibiotics is illustrated by the Spanish film,

Mercado prohibido (Forbidden Market), shown for the first time in 1952. A portrait of the postwar climate in Spain, it centres on the leader of a group of illegal antibiotic dealers who needs chloramphenicol for his own son, who is suffering from typhoid fever. In order to save his son's life, he begs for help from those he has deceived and betrayed, and is finally arrested, before he can visit his son and administer the medicine⁴⁷.

Although official supplies of penicillin were becoming established by 1950, smuggled penicillin was also available through illegal trade. Police would intercept smugglers during moonless nights, usually based on informal information they received (a *soplo*, tip-off); according to court reports based on statements of those involved, goods were brought to a beach or near the shore on a cargo ship sailing under a foreign flag, anchored off the Spanish coast to take on provisions for its journey to another country. Those who found the smuggled goods received a reward; discoveries were encouraged with financial incentives. The goods were confiscated, and their intended final destination was not made clear in court reports. Fines and prison sentences were meted out to those found transporting or possessing penicillin without permission and from 1950 on, the confiscated penicillin would be sold at auction. Although the main products smuggled into Spain at that time were coffee and cigarettes, there were other commodities, such as nylons, nail polish and medicines, which joined the basic foodstuff that had fuelled the black market since the 1940s⁴⁸. The court of Smuggling and Fraud had local courts to which the military police reported any smuggling activity and the subsequent confiscation of penicillin. Although not as popular as coffee, cigarettes and nail polish, the drug circulated widely, and was kept in homes and pubs, and transported in trucks, regular coaches and in baggage deposited on trains, to be collected by, in one case, a woman waiting at the train station, or in another, carried by a man in a bag down a town street near the seaside. In the

midst of an extremely watchful society – as Spain was in the early 1950s – smuggling was severely prosecuted once the distribution of legal penicillin began.

As discussed at the beginning of this paper, the amount of penicillin seized at San Fernando in 1950 was substantial. In the years to come, the *Guardia Civil* would intercept various quantities of flasks, from ten to hundreds. In May 1953, 22,000 flasks of Merck penicillin and 5,600 of dihydrostreptomycin – along with nylons, toothbrushes, flashlights, lighters, nail polish, sugar and cigarettes – were found on a Danish boat anchored 500 metres west off Punta Antequera on the island of Tenerife, one of the Canary Islands. The person in charge was from Tangier and stated that the boat was on its way to Monrovia⁴⁹.

In July 1953, penicillin was found along with other commodities – including whiskey, gin, and cocoa – in a warehouse at the Barcelona harbour. The penicillin had apparently been brought to treat a driver who worked at the warehouse, and came from the Andalusian town of Málaga⁵⁰. In October a truck was intercepted in the south of the island Gran Canaria, also in the Canary Islands, which, in addition to sugar, blond cigarettes and margarine, included seventy-four boxes containing a total of 29,000 flasks of foreign penicillin. In November of the same year, at the bus station in Granada (also in Andalusia, in southern Spain), a traveller's luggage was found to contain 400 flasks of foreign penicillin. The traveller stated that it was for his brother, who intended to distribute it among his friends, and to another brother who was a pharmacist. The flasks were confiscated and a year later the court fined him an amount in pesetas that was double the current price of the penicillin. Later the same month, 280 flasks were found in another piece of luggage at the same bus station, apparently coming from Málaga⁵¹. In December, in a transport agency at Guipúzcoa (in northern Spain, the Basque Country) a parcel was found containing 100 flasks of penicillin and the woman who had

sent it from Barcelona, being unable to prove it was legal, was subsequently fined⁵².

In April 1954, again at a Granada bus station, a driver gave the station chief a parcel containing fifteen flasks of penicillin, and a third person stated it had been sent from Málaga for an aunt who needed it for health reasons. In Málaga, in May of the same year, the local court of smuggling and fraud reported the arrests of two men by military police: one had been carrying a large box containing 225 flasks of penicillin; the other, a big bag of 250 flasks of the drug. Neither man had an import license⁵³.

Various types of transportation were used to distribute illegal penicillin, including boats, donkeys, coaches, and luggage of any kind. The amount of flasks could range from ten, perhaps for the treatment of a relative, to thousands for a medium-sized business. Penicillin was sought for, found, and confiscated; those responsible judged and fined. The public life of the drug crossed any boundary, despite police surveillance during the 1950s being unremitting and, at times, efficient. I could not find any report in the Court of Smuggling and Fraud archives of the confiscation of penicillin during the 1940s, when it was scarcest and increasingly in demand. The 1940s, the decade of food rationing cards, were the most repressive period of the Franco dictatorship, when corruption and the black market prevailed. Scarcity has been the arena in which the life of illegal penicillin has been both most familiar and most poorly documented. In keeping with the historiography of the Spanish black market for wheat during the same decade, it could be suggested that smuggling was to some extent accepted, a blind eye being turned towards it. The scarcer a commodity was, the more expensive it became; therefore penicillin scarcity was nurtured by a system which controlled both the price and distribution of a scarce product⁵⁴. During the postwar years, the state avoided a free market of scarce, basic foodstuffs – the rationale for the ration cards – while the black market was regulated

by a capitalist economy's relationship between supply and demand: the control of prices – limiting the extent of capitalism – shifted capitalist norms to a black market which fully applied them.

Everyday life in the first decade and a half of the Franco dictatorship, during the post-Spanish Civil War, illustrated the misery resulting from public policies of repression and corruption in the economy and industry. Prices were controlled by the government, and a rigid import system was in force, yet at the same time they consented to the smuggling of food and other necessary products such as medicines. Legality was challenged every day by this two-sided practice of regulating while participating in corruption, as bureaucracy fed the system⁵⁵.

A long postwar period for the stabilising of legality

While it remained scarce and illegal, penicillin was expensive. Once the government had promoted and authorised manufacture in Spain, and when penicillin stocks reached a surplus, illegal batches of the drug from abroad circulated through Spain and brought prices down. By making it cheaper, the black market participated in the norms and rules of the legal economies of the time. A powerful economic policy and a bureaucratic life governed not only the legal, but also the illegal trade of penicillin. And although this trade was not always legal, penicillin as such was legal, branded and from a known source: the name of the pharmaceutical producer was usually included in smuggling reports.

The drug was embedded in the politics of its time: in war and peace, as a legend and a real power to cure wounds, its price was regulated by an international market that was, for a time, as powerful as the norms the Franco dictatorship imposed. Legal penicillin, strictly controlled, initially by the US and then the Spanish Committee for its distribution, finally joined the market: it was bottled, and a short time later, manufactured in Spain, while the illegal trade in the drug played a part in its social life, apparently by supplying cheaper penicillin

than that legally manufactured in Spanish factories. As with tobacco smuggling, penicillin benefited from the high price of the legal, taxed product. Alien to the discipline imposed by the Franco government, illegal penicillin – that on which tax had not been paid and the distribution of which was not accounted for in official terms – was not regulated, but according to public memoirs that this brief article cannot ignore, circulated widely during the 1940s. US penicillin was bottled in Spain from the 1950 onwards, and in 1952, manufacture of the drug itself began. As both the legal and the illegal coexisted, penicillin played its part in the reconstruction of the economy during the postwar period, having already contributed to the Allied victory. Escaping from so-called modernity, penicillin smuggling as a postwar practice and the experiences of both sellers and buyers resisted standardisation and bureaucracy. Attached to the early distribution and severely-controlled circulation of the scarce good, which penicillin was during the Second World War, was a secret, uncontrolled dissemination that took place through the troops at the front, along political geographies, and over time⁵⁶. State bureaucracies drew legal borders for its circulation, as Chester Keefer and other US medical authorities of the Second World War effort established the infections of troops at the front as a priority regarding the spaces of distribution.

A political economy of frontiers played a part. The emergence of Allied power during the immediate postwar period, headed by US support, was preceded by the early distribution of humanitarian batches. Scarcity remained until penicillin began to be bottled in 1950 in Madrid and León by two private firms approved by a state policy promoting industrial production during the 1940s, the autarchy decade. And even after this, the high legal price contributed to keeping smuggling alive, offering as it did foreign penicillin at a cheaper price. As a commodity that crossed borders, penicillin, in all its transits between the law and hidden trade, between countries and social do-

mains – between war fronts and from a war front to an urban site where it was to be sold – reveals the practices of the early years of prosperity in the 1950s. These transits were permanent tests of a society based on taxes and exchanges, law and bureaucracy, control and discipline and the creation of standards. By following penicillin across geographical, political and professional frontiers, we see a drug as a border-crossing commodity that challenged and also stabilised norms and laws: illegal penicillin contributed to its healing fame while putting in jeopardy a political-economic system that was validating bureaucracy and control of the same substance with only partial success. The official route fit with the economic interests of Cold War policies: jurisdiction combined with a free market, through the fissures of which penicillin escaped police control. Legally manufactured, at some point it moved into the illegal space of smuggling and fraud when it was already an object which belonged to an international network of trading commodities.

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4. ABC SEVILLA, 1944; 12 March: 10.
5. For contemporary smuggling in Spain, see SÁNCHEZ AGUSTÍ F., *Espías, contrabando, maquis y evasión: la Segunda Guerra Mundial en los Pirineos*. Lleida: Milenio, 2010.
6. For the case of a black market of wheat during the same period, see BARCHIELA C., *Crecimiento y cambio en la agricultura española desde la Guerra Civil*. In: NADAL J., CARRERAS A., SUDRIÁ J. (eds), *La economía española en el siglo XX. Una perspectiva histórica*. Barcelona, Ariel, 1987, pp. 258-279. For the illegal trade of other goods in the same period, see SÁNCHEZ-AGUSTÍ, see note 5.
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11. SERRALONGA I URQUIDI J., *El cuento de la regularización sanitaria y asistencial en el Régimen franquista. Una primera etapa convulsa, 1936–1944*. *Historia Social* 2007; 59: 77-98.
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 17. FLOREY H., CAIRNS H., *Investigation of war wounds, penicillin: a preliminary report to the War Office and the Medical Research Council on investigations concerning the use of penicillin in war wounds*. London, War Office, 1943. *See also* BUD R., *see* note 10.
 18. LA VANGUARDIA, 1944; 12 March: 3; ABC SEVILLA, *see* note 4.
 19. ABC, 1944; 12 March. Oran and Algiers were well-known settings for tobacco smuggling in Spain: CABRERA M., *see* note 2.
 20. Details on the case are in LA VANGUARDIA, 1944; 11 March: 6. The report stated that the penicillin was 'like that obtained' by this Brazilian institution.
 21. BUD R., *see* note 10.
 22. ABC, 1944; 23 April.

23. LA VANGUARDIA, 1944; 12 March: 5. A long, full-page report was published this day with many details regarding what penicillin was and how it was obtained and tested in Britain.
24. See BURNS M., *see* note 15; SANTESMASSES M.J., *see* note 7.
25. LA VANGUARDIA, 1944; 18 April: 10.
26. The first mention I found in newspapers is in LA VANGUARDIA, 1943; 12 November: 5, about penicillin in Buenos Aires, Argentina.
27. KEEFER C.S., *The present status of penicillin in the treatment of infections*. Proceedings of the American Philosophical Society 1944; 88(3): 174-176.
28. HOBBY G., *op. cit.* (note 10), pp. 143-145.
29. LA VANGUARDIA, 1944; 21 September: front page; ABC, 1944; 22 September: 13. On US bureaucracy's attitude to penicillin when it was still scarce, see ADAMS D.P., *The greatest good to the greatest number: penicillin rationing on the American home front, 1940-1945*. Oxford, Peter Lang, 1991.
30. ABC SEVILLA, 1944; 9 November.
31. ABC, 1944; 17 December.
32. JIMÉNEZ CASADO M., *Doctor Jiménez Díaz. Vida y obra*. Madrid, Fundación Conchita Rábago de Jiménez Díaz, 1993, pp. 348-355.
33. See OLAGÜE DE ROS G., *Del uso de la retórica en el discurso científico: a propósito de los programas de trabajo de Fidel Fernández Martínez (1890-1942) y Eduardo Ortiz de Landázuri (1910-1985)*. Speech read at the public reception. Granada, Real Academia de Medicina y Cirugía de Granada, 2001, p. 33.
34. ABC SEVILLA, 1944; 11 September.
35. LA VANGUARDIA, *El control de la penicilina*. 1945; 22 September : 2.
36. On this argument, see CHRISTIANSEN T., *Crime and Punishment in the Black Market in Spain, 1940-1950: An Analysis of the Fiscalía de Tasas*. Ager 2005; 4: 63-99.
37. CHRISTIANSEN T., *see* note 36.
38. On the Spanish pub in Madrid, *see*, for example, JIMÉNEZ CASADO *see* note 32 p. 350. The pub's owner was a patient of Jiménez Díaz, according to JIMÉNEZ CASADO *see* note 32, p. 350. *See* also the personal recollections of a rural MD, CHAMORRO J., *Recuerdos de una vida*. Oñate, Diletante, 2002, p. 28, 46-48.
39. BUD R., *see* note 10, p. 59.
40. On the new styles and policies of prescribing in the US, *see* GREEN J., WATKINS E.S. (eds), *Prescribed: Writing, Filling, Using and Abusing the*

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- Prescription in Modern America*. Baltimore, Johns Hopkins University Press, 2012. On the new, scientific marketing, see GAUDILLIÈRE J-P., THOMS U. (eds), *Pharmaceutical firms and the construction of drug markets: from branding to scientific marketing*. History and Technology (Special Issue) 2013; 29(2): DOI 10.1080/07341512.2013.828867.
41. CHRISTIANSEN T., *see* note 36.
 42. MARAÑÓN G., *Prólogo*. In: BUSTINZA LACHIONDO F., *De Pasteur a Fleming. Los antibióticos antimicrobianos y la penicilina*. Madrid, Plus Ultra, 1945. My translation.
 43. ‘Moción de 11 de septiembre de 1946’, Ministerio de la Gobernación, Dirección General de Sanidad, copia con registro de entrada en el Instituto Nacional de Industria de 8 de enero de 1947, Archivo Histórico del Instituto Nacional de Industria (Madrid), legajo 270, documento 7 (1946–1947). The Instituto Nacional de Industria (INI, the National Institute of Industry) was created in 1941 to promote state participation as an entrepreneur and state investments in the Spanish industrialisation process after the Spanish Civil War. During the first decade of Franco’s regime, the INI was the main authority in industrial development, creating many industries and promoting state monopolies in several sectors. On the history of the INI, see MARTÍN-ACEÑA P., COMÍN F., *INI. 50 años de industrialización en España*. Madrid, Espasa Calpe, 1991.
 44. On Løvens and penicillin manufacturing see COZZOLI, this issue.
 45. SANTESMASES T., *see* note 7.
 46. CEPA, Advert: ‘*Medio millón de frascos de penicilina G sódica..fabricada en Estados Unidos*’. ABC 1950; 31 December: 21.
 47. On the film, see SÁNCHEZ J.G., SÁNCHEZ E.G., *Antibióticos y cine: El tercer hombre y Mercado prohibido*. Revista Española de Quimioterapia 2004; 17(3): 223-225. The Third Man, a film by Carol Reed based on the novel with the same title by Graham Green, released in 1949 was significant and surely influential.
 48. MEDINA GARCÍA E., *Contrabando en la frontera de Portugal: orígenes, estructuras, conflicto y cambio social*. Doctoral Thesis. Universidad Complutense de Madrid, Servicio de Publicaciones, 2004.
 49. DELEGACIÓN DE HACIENDA DE SANTA CRUZ DE TENERIFE, Junta Administrativa de Contrabando y Defraudación, Archivo de Hacienda, grupo (1)2.10, legajo19426, AGA, Alcalá de Henares, Madrid.

50. DELEGACIÓN DE HACIENDA DE BARCELONA, Tribunal provincial de Contrabando y Defraudación, Archivo de Hacienda, grupo (1)2.10, legajo19426, AGA, Alcalá de Henares, Madrid.
51. DELEGACIÓN DE HACIENDA EN LA PROVINCIA DE GRANADA, Tribunal provincial de Contrabando y Defraudación, Archivo de Hacienda, grupo (1)2.10, legajo19426, AGA, Alcalá de Henares, Madrid.
52. Expediente de contrabando 106 1953-c de menor cuantía. (1)2.10 Legajo 19428, AGA, Alcalá de Henares, Madrid.
53. TRIBUNAL PROVINCIAL DE CONTRABANDO Y DEFRAUDACIÓN DE MÁLAGA, Exp 738/54 (1)2.10 Legajo 19428. AGA, Alcalá de Henares, Madrid.
54. Although Spanish authorities during the Franco dictatorship displayed interest in controlling the black market, in 1950, according to the estimation of the Spanish Ministry of Agriculture, illegal trading of wheat distributed more than fifty per cent of the total wheat commercialised during the 1940s. In the agrarian sector at least, the black economy was highly important during that decade. See BARCIELA C., *Intervencionismo y crecimiento agrario en España*. In: MARTÍN ACEÑA P., PRADOS DE LA ESCOSURA L. (eds), *La nueva historia económica de España*. Madrid, Tecnos, 1985, pp. 285-316. Also CHRISTIANSEN T., *see* note 36.
55. CAZORLA SÁNCHEZ A., *Fear and progress: ordinary lives in Franco's Spain, 1939–1975*. Oxford, John Wiley & Sons, 2009. On the end of the 1950s onwards, see TOWNSON N., (ed.) *Spain Transformed: The Franco Dictatorship, 1959-1975*. Basingstoke, Palgrave Macmillan, 2010.
56. On smuggling as a secret trade, see TAGLIACOZZO E., *Secret Trades, Porous Borders: Smuggling and States along a Southeast Asian Frontier, 1865–1915*. New Haven, CT, Yale University Press, 2005.

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