2. Robles Disease (Onchocerciasis): Discovery and Dream of Dr. Figueroa

1) The Discovery of Robles Disease*

Horacio Figueroa Marroquin

This story starts in March, 1915 when Dr. Rodolfo Robles, who was then 37 years old and dedicated to his private practice, was completely unaware that one day soon a very young patient would bring him the luck of being the discoverer of a disease which, hidden in the mountainous regions of Guatemala, was depriving hundreds of human beings of their sight.

Some authors refuse to believe that the discovery which brought fame to Dr. Robles was the result of chance, but it has been said that chance comes only to the prepared mind [13]. Since there are many minor interpretation errors among the different authors regarding Robles’ disease, we have gone directly to the original sources, that is, the publications made by Robles himself.

There were a total of three communication made by Robles, and of these, the first has never been reproduced when discussing the history of the disease. We now have the opportunity of publishing for the first time a photocopy of this first publication which due to the suspension of the publication of scientific journals during World War I it was published as a news item in a Guatemalan newspaper, “La Republica”, on December 29, 1916. It is rather surprising that Dr. Robles forgot the exact date of the publication of this report in his paper submitted to the “Bulletin of the Society of Exotic Pathology of Paris”, as shown by the following statement which appeared as a footnote on the first page: “We have already published a part of this study in two articles. Due to the war, medical publications have been suspended and we have been forced to publish the report in the newspaper “La Republica”, Guatemala, December 27, 1916, and in “La Juventud Medica”, August, 1917”.

This information which appears as a news item in the cited newspaper must be considered as the first scientific publication of Robles’ disease, not only because they are the starting point for all later studies, but also to show that in spite of all the work done since Robles’ time relatively little new has been added.

1st Rodolfo Robles (through Dr. Eduardo Aguirre Velasquez. “Una nueva enfermedad ha sido diagnosticada en Guatemala”. Diario “La Republica”, Dec. 29, 1916 [15].

2nd Rodolfo Robles (through Dr. Victor Manuel Calderon). Enfermedad nueva en Guatemala. La Juventud Medica, August, 1917 [16].

3rd Rafael Pacheco Luna. Disturbances of vision in patients harboring certain filarial tumors. Am. J. Ophthalmology, February 1918 [17].

4th Tacito Molina Izquierdo. Onchocerca sp. Am. J. Ophthalmology, April 1919 [18].
A NEW DISEASE IN THE AMERICAN CONTINENT HAS BEEN DIAGNOSED IN GUATEMALA

The patient research of a distinguished physician has resulted in the identification of Filaria onchocerca. It is believed that there are a large number of patients suffering from this disease in the Pacific Coast area. Our personal interest leads us necessarily to investigate with care and fondness the advances that medical science in its several and ample manifestations achieve in Guatemala. The news that a disease thus far unknown not only in Guatemala, but in the American Continent has been diagnosed made such an impression on us that as soon as the working day was over we headed for the clinic of our close friend, the competent physician Dr. Rodolfo Robles to obtain further information. From the interview we concluded that the facts are correct and that the news is accurate: we are in the presence of a disease which, if the reports from the endemic zone prove right, must be subject of further investigations and adequate defense mechanisms.

THE FIRST CASE

“Two years ago,” says Dr. Robles, “a little girl came to my clinic who presented the typical symptoms of chronic erysipelas of the face, with episodes of high temperature. I treated the patient to the best of my knowledge as other physicians consulted by her family had done before. The disease, however, proved to be resistant to all therapeutic measures, and two years have since passed.”

“Because of the permanent edema I thought that the lymphatic ducts were mechanically obstructed, or as a result of toxins in the lymphatic system; it was a logical explanation, but I could not corroborate the diagnosis.”

A SECOND CASE

“Meanwhile, I was called on not long ago to treat a similar case with the same symptoms. This patient came from the same region of the country as the first one did. I made the same tests and probably would have been as unsuccessful as before were it not for the fact that the patient asked me to excise a small tumor in his forehead. This tumor gave me the clue to a matter that is probably going to be the subject of much attention; it is undoubtedly a very significant finding which will allow us to fight under better and more advantageous conditions against a new enemy.”

SUSPICIOUS ABANDONED

One day on thinking about the first case, Dr. Robles suspected it might be a case of filariasis. *Filaria loa* dwells in the conjunctiva membrane of the eye where it forms a cyst resulting in symptoms similar to those found in the two patients examined by him. Following this theory, Dr. Robles proceeded to examine both eyes with negative results: there was no trace of *Filaria loa*.

THE REVEaling Tumor

After excising the tumor, which was a matter of secondary importance, Dr. Robles being puzzled by the fibrous consistency of the tumor, sliced it open with a scalpel and was astounded to find, coiled inside like a very fine thread or human hair, a female filaria.

WHAT KIND OF FILARIA HAD HE FOUND

“This is the filaria”, he said, showing us the opened tumor inside of which, we could see the long, coiled body typical of the filaria.

“I have studied the matter; I have compared the worm with the illustrations in the parasitology textbooks; I have observed it under the microscope, and as you can see for yourself it is clearly that filaria which up until now has only been found in Africa and known as FILARIA ONCHOCERCA whose morphology checks perfectly well with the textbook description of this parasite.”

THE WAY IS OPENED

“It was now only a matter of carefully investigating the origin of the lymphangitis in the first patient. She was brought to the sites at first, but looking for the tumors causing the symptoms. They were not located in the forehead, but in the scalp of the occipital region. An excision was indicated and I performed it.”

Once the tumors were opened he found, as in the first case, the filarias coiled inside. In this case they were tiny
males. “These” he said shaking the vial in which he kept them. Being nearsighted we could not see the parasites at first, but on looking closer we could see shapes like circumflex accents which due to the movement imparted to the vial, moved downward in the confined space where they had been imprisoned.

**THE NEGATIVE CONFIRMATION**

If the parasites were the direct agents causing the lymphatic symptoms, it was logical to assume that excision of the tumors would result in a remission of the symptoms of the erysipelas—let us call it that. “And did the edema and reddening of the skin disappear?” Almost immediately. “When the operation incision had healed there were no traces of lymphangitis, which proved that the condition was the result of the presence of the filaria.”

**TWO NEW CASES**

“The success of the treatment has brought two new cases to my clinic”, continues Dr. Robles, “and naturally I did not have to search long to locate the filarial tumors.”

**THERE ARE MANY MORE SIMILAR CASES**

“According to the testimony of the patients I have treated, all of them come from the Patulul region. I can only say that there are many more similar cases and that the endemia at present attacks more than a thousand individuals of different ages and sex. I do not know why the disease prevails in that region, or whether filariasis is generalized in other regions of the country. It would be very useful if local doctors would collaborate in a survey to locate cases of filariasis, which undoubtedly are abundant in warm and humid regions. The disease, as you know, has been found in Africa by Belgian, French and English doctors. It is believed to be transmitted by a fly; this matter should be studied in Guatemala. It is also believed that the disease follows the course of certain rivers, but in our country nothing can be confirmed as yet in that respect. I am planning a field trip and upon my return, I will be very happy to discuss my findings with you.

Undoubtedly, the study of this new enemy whose presence has been such a surprise to the dedicated doctor, and that will continue to be a surprise to the readers of this article, will be very important and in the future should lead to the definition of special prophylactic measures. Dr. Robles is satisfied with his investigations. Men of science see the appearance of a new disease—which careful observations and study will later unmask—with a certain healthy eagerness, because it is undoubtedly a personal success that evidences uncommon powers of observation and judgment. The people from Patulul, on the other hand will now have to face a fiarialis phobia, and any tumor they may have will be suspected of harboring—a snake of capricious coils—an Onchocerca filaria whose name, despite its exotic sound, will soon become familiar.

To the scientific world, the complete observation of the endemia, its origin, geographical distribution, manner of transmission, etc., will be an important contribution to parasitology and Guatemala will have the privilege—albeit a sad one—of being the first country in the American continent where the parasite was diagnosed. Because it is almost certain that this filaria must be present in other countries and physicians who are aware of those findings in Guatemala will attach more significance to skin tumors associated with symptoms such as lymphangitis.

We are very pleased to have been able to transmit to our readers the first fruits of these studies and to honor Dr. Rodolfo Robles in these columns, to whom belongs the scientific priority in this important matter”.

This was therefore the first news published for the scientific world that onchocerciasis had been discovered in the American continent.

Several national authors have committed errors, of little importance, regarding the sex of the two first patients seen by Robles and the historical sequence of the discovery, errors which have been adopted by foreign authors and which we would like to rectify here. Sometimes, both the name and the sex of a person on which a disease, a symptom or a reaction is discovered is important because it is customary to name these medical phenomena after the person or the place where the discovery was made. In spite of the fact that the disease that concerns us to day bears the name of the discoverer, for the sake of historical accuracy we are going to rectify some of those errors.

In the three “memoires” written by Robles, he states that the first patient was female - a girl he says in the interview given to the newspaper “La Repuplica”; a female patient, he says both in his second “memoire” published in “La Juventud Medica” and in his third “memoire” read in Paris. With the first patient Robles did not reach a diagnosis at all, but he noted that the symptoms were similar to those of erysipelas, without it being specifically that disease, that is to say, something completely unknown to him. The second patient was at the time, an 8 year-old child. He is still alive and is a member of the Guatemalan forum. Through his kindness we are able to publish now for the first time in the history of Robles’ disease, his photograph and a letter dealing with our story.

This second patient had a tumor and his family asked
Robles to excise it. Robles thought that it was just a benign tumor, a wen may be, and so his surprise was great on finding inside the tumor a filaria which later in turned out to be Onchocerca volvulus.

Undoubtedly worried because of his failure to reach a diagnosis in these two cases whose symptomatology was so alike, he thought that they could be suffering from Filaria loa. He examined both eyes but found nothing and when he discovered the contents of the boy’s tumor he asked the girl to be brought to his clinic, and found male Filarias inside her tumor. American onchocercosis had been thus discovered. Later on this disease was and is known as Robles’ Disease.

From then on, his only thought was to look for tumors and with the consent of the owners he went to a plantation. “San Francisco Miramar”, where he remained from March 29 to April 5 of 1915. He was lucky in finding many patients who made it possible for him to continue with his studies, which soon would lead him to the firm belief that the skin and ocular symptoms of many patients were due to the filaria he had recently discovered in March or February. From then on it was not luck that guided him, but rather his keen powers of observation and his scientific background.

From the first two cases Robles concluded that the symptoms were those of a kind of erysipelas produced by an obstruction of the lymphatic ducts. The small tumor of the second patient was relatively unimportant, and the enigma would have been left unsolved it not for the fact that the family requested Robles to excise the tumor.

It is interesting to record the memories of those days of the small boy, now a lawyer, whom Robles treated. A personal communication from him follows: [21].

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“Guatemala, 5 de octubre de 1962

Dr. Horacio Figueroa M.
Dear Dr. Figueroa:

Regarding the discovery of filaria by Dr. Robles the scant information I can give you is the following: I do not remember the year, but it must have been about 1915, that a tumor was excised from my forehead by the professional you refer to. When the doctor first examined me, he told my parents that it was only a sebaceous cyst.

A few days after the operation I returned to Robles’ clinic, on 11th Street, and to my mother’s surprise he informed her that the case was not as simple as he had thought, and he showed us a small vial containing alcohol and a long parasite resembling sewing thread. On this occasion I told the doctor that my vision had improved, since for a long time I had been suffering from photophobia which prevented me from leaving the house, especially in strong light. The doctor showed a great deal of interest in this, and I remember that he started asking me many questions and asking me to come to his clinic almost every day. He observed that the purple hue of my skin subsided gradually. All this led Dr. Robles to request permission from my mother to visit our coffee plantation “San Francisco Miramar”, in the municipality of Santa Barbara, which then belonged to the Department of Solola, and now is in Suchitepequez. My mother had told Robles that in the plantation there were many people with symptoms similar to mine and that the Indians used to rub toad bellies on the skin to obtain some relief, treatment which, as I recall, was not used in my case.

Taking advantage of the Holy Week holidays Dr. Robles accompanied by Dr. Faustino Gonzalez Sierra went to the plantation and he excised a large number of cysts. They improvised an operating table in one of the corridors of the main house, operating on all field hands who presented tumors and whose heads had been previously shaved. Dr. Gonzalez Sierra, who at the time was a medical student and Dr. Robles’ practitioner, can provide valuable information about that week. I want to make clear though that when I was operated on, only Dr. Robles and Gonzalez Sierra were present since my mother and a friend who accompanied her refused to witness the operation.

I understand that there is the belief that filariasis was brought from Mexico by pilgrims going to Esquipulas, but that belief seems farfetched to me since, at least in the region I mentioned above, we never saw pilgrims from Mexico.

I enclose a photograph of the main office of the plantation where the makeshift operating table was set up; in the background is the volcano Atitlan with coffee covered slopes. I regret that this is the only photograph available of the office but this is the place where the first filarias were extracted.” (After those four which Robles had previously excised in his clinic, as mentioned before.)

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This letter from Lic. Ruiz Aguilar, who is not acquainted with Robles’ “Memoires” coincides with the reports from the discoverer.

Once filarial was discovered and with the experience acquired from the examinations and treatment of a large number of patients, Robles reached the conclusion that the skin disorders, which from then on he called Erysipelas of the Coast, and the ocular lesions were a consequence of parasitic infestations by filaria, conclusion which was also arrived at by Castellani in 1925 when after studying the disease in Guatemala he expressed the opinion that the nodules, the eye symptoms, and Coastal erysipelas were all manifestation of onchocerca infestation [22].
Robles’ discovery that the eye lesions were due to filariasis had a world-wide repercussion, since no one before him had discovered that filaria was capable of causing blindness is enormous since there are millions infected with the disease and thousands who are already blind in Africa and the American Continent.

The discovery is of great importance even for the zoological classification of filaria. At the beginning Brumpt and Robles themselves thought that this was a different filarial to which they gave the scientific name Onchocerca caecations [23]. Later, when the investigations in Africa realized that ocular lesions were also present in onchocercosis patients on that continent, a fact which had been overlooked until Robles’ discovery, and that the topographic distribution of onchoercomas in the body of the patients was not different in the African and the American disease, they reached the conclusion that there was no difference between them and that there is no African and American onchocerca but one and the same: Onchocerca volvulus Leuckart, 1893.

The problems arising from the discovery were gradually solved when other Guatemalan investigators began research on the subject, before outstanding men of science started investigating in Mexico. This happened in 1923 when Fulleborn in Hamburg diagnosed Robles’ disease in Mexican children from the Custipeque Valley [24] thus sounding the alarm which was picked up by Hoffman and Bustamante, who in 1925—January and December, respectively—discovered the disease in Mexican territory in the State of Chiapas [25, 26].

Once the causative agent of Coastal Erysipela was discovered, Robles continued investigating the different problems which arose due to his discovery and with almost genial intuition he left the way paved for their solution. He foresaw the transmission of the disease by a mosquito (simuliidae) and although in that interview for “La Republica”, he mentioned only that in Africa the disease was thought to be transmitted by a fly, in his second and third publication he states clearly that simuliidae are the vectors of the disease, which was corroborated by several American and African investigators who found microfilarias in several stages of development in the body of different species of simuliidae, although at present we do not yet know the mechanism for transmission from mosquito to man, nor has experimental transmission to man been successfully accomplished.

Besides leaving behind the description of the clinical forms, having studied the characteristics of endemic regions in Guatemala and having pointed out the true transmitters of the disease, he also left treatment of the disease through excision surgery and by intratumoral injections, treatments which have not been surpassed to this date, in spite of trials and experimentation with innumerable chemical compounds.

All of this can be considered as the greatest Guatemalan contribution to American pathology, with a profound repercussion on tropical pathology. But the other two main manifestations of the disease, the ocular and cutaneous symptoms, soon drew the attention of other Guatemalan investigators, notably Dr. Rafael Pacheco Luna who, with his outstanding study on the ocular lesions, opened the second Guatemalan contribution to the knowledge of Robles’ disease, Pacheco Luna, was the first to study and classify the ocular lesions of the disease and his description remains classical and has led to more profound and varied studies, by investigators from other nations, of the innumerable changes that the filaria produces in the eye tissues.

Soon after his discovery, Robles recognized the cause/effect relationship between filarial and the skin and eye symptoms shown by the patients, and through the study and observation of many cases he reached the conclusion that filaria is one of the agents causing blindness. Soon afterwards other works from Guatemalan authors were published which confirmed Robles’ conclusions [27, 28].

In Guatemala Dr. Rafael Pacheco Luna was studying the ocular lesions in Robles’ disease in 1916, and his results were published in February, 1918 [29]. He was able to diagnose parasite infestation by a simple eye examination, even without seeing any tumors or asking the patient whether he came from an endemic region. The eminent German parasitologist Fulleborn, who had visited one of the most endemic regions in Guatemala, stated in 1924 that he had not been able to establish any relationship between filaria and the ocular lesions. In 1931 this relationship, still had not been diagnosed in Africa, and it wasn’t until 1931, that Hisette after reading the reports by Robles and Pacheco Luna, discovered the disease in the Belgian Congo [30] although Gaxiola reported that Clapier had been the first one to discover it in Africa in 1927. Whatever the truth may be, Benitez Soto has found several errors in Gaxiola statements.

In Mexico, Larumbe, who was acquainted with Pacheco Luna’s work, found the ocular lesions in 1926, and in January, 1930 he sent a summary of his studies to our Journal “The School of Medicine” [31].

It was Pacheco Luna then who first studied and classified the eye lesions in Robles’ disease and published reports which are still classics in their field as well as the main reference work on the eye lesions of Robles’ disease [32].
Pacheco Luna was born in Guatemala City in 1882. His father was Doctor Agustin Pacheco and his mother Mrs. Maria Luna de Pacheco. He studied medicine at the University of Stanford, California; and University of San Carlos of Guatemala, where he graduated M.D. in 1907. Afterwards he specialized in Ophthalmology under outstanding European ophthalmologists such as Lapersonne, Morax, Fuchs, Meller and others. During his life he wrote many papers about his specialty and other matters. Died March 16, 1968 in Guatemala City.

Soon after his first report was published, he enlarged it in the “Bulletin of the Society of Exotic Pathology of Paris” in 1919. Later, he published in the following journals: The Cuban Journal of Ophthalmology in 1920; The American Journal of Ophthalmology in 1921; Guatemala Medica in February, 1936, September and December, 1940 and June 1941; Annals of the Mexican Ophthalmological Society in January, 1942; La Juventud Medica in September, 1944; the British Journal of Ophthalmology in 1946, and in several other journals, as well as in the Second Pan-American Ophthalmological Congress, held in Montevideo, Uruguay in 1945.

Dr. Pacheco Luna thus brought attention in America, Africa and Europe to the ocular lesions in Robles’ disease. After two years of research he attributed to Onchocerca volvulus what in our time is accepted without discussion (In Guatemala, Dr. Arturo Quevedo was the first to observe live filariae in the eye).

As a historical curiosity, Dr. Pacheco Luna had the opportunity to examine Lic. Alberto Ruiz Aguilar in 1940 [33], that is 25 years after Robles discovered in that patient the disease which now bears his name. Pacheco Luna found indelible remains of superficial keratitis, but his eyes and sight were otherwise normal.

The other historical fact that we would like to present here is that related to the skin lesions produced by Onchocerca volvulus in humans. It was also Robles and his Guatemalan students who discovered the first cause and effect relationship between skin lesions and filaria. From the beginning it was and still is a subject of heated discussion. Some still deny not only the ocular lesions in Robles’ disease attributing them to malaria or to the now fashionable viruses, but also refuses to admit that skin lesions are part of the clinical signs of Robles’ disease.

This part of the history of Robles’ disease in Guatemala is rather curious, because a Guatemalan author Dr. Pastor Guerrero could have been ahead of Robles in discovering the disease by at least seven years. It is not a matter of discussion whether priority belongs to Robles or to Guerrero, since the latter did not recognize the disease when he saw it.

In 1908, Dr. Pastor Guerrero presented a printed report before the Fifth Pan-American Medical Congress, held in Guatemala. The title of this report is “Goiter, myxedema and cretinism in the Guatemala highlands” [34]. In this study he discusses the filaria endemic regions but ascribed the symptoms observed to “myxedema without goiter”, based on the myxedematous aspect of the patients suffering from Robles’ disease.

On the other hand, on page 27, the following statement appears: “We will now discuss the other form of thyroid dystrophy observed in the lowlands of the hydrographic region we have been discussing”.

“Following the course of the goitrogenic waters, we see the disappearance of endemic goiter at approximately 4,000 feet about sea level. Going down toward the Pacific Coast the inhabitants of villages and plantations do not show enlargement of the thyroid. No fuego is seen in that region the Yepocapa southeast of the volcano”—Further on he says; “The following are the symptoms in our patients: swollen faces with dark pigmentation in the cheekbones, slightly cyanotic lips; eyes almost hidden by swollen eyelids, thick and slightly grained conjunctiva, grayish sclera and slightly opaque corneas”.

Furthermore, on page 29, we read with astonishment: “The endemia we are trying to bring to light with the classical name it deserves is the same that forces many farmers and field hands to flee the region and which they call erysipelas and eye diseases.” the symptomatology of this disease is identical with that of pachidermic caquexia described by Raymond, Vaquez and others except maybe in the ocular disturbances: The cornea in all patients suffering pachidermic disease is turbid and as if affected with interstitial keratitis of very slow development and which sometime results in complete opacity of the cornea. Among these patients there are many who are blind. And others are semi-blind due to partial nephelium and perhaps to alterations in the posterior chamber of the eye. The conjunctiva appears thick and yellowish at times with reddish granulations and the sclera shows blackish reflections as if impregnated with choroid pigment. The gerontoxon or keratic ring appe ars prematurely giving the eye a wilted and senile appearance. There is slight photophobia with miosis and the freelip of the evelid is hardened, rheumy and suffers from epilation. This ophthalmia which accompanies the endemia must be the subject of special investigations; perhaps it is a kind of trachoma, but in any case it appears as an epiphenomenon of myxedema and its development is aided by the dystrophy.

“Popular opinion attributes it exclusively to a mos-
blepharospasm, and even of the dark pigmentation and transmitted microfilariae of Onchocerca volvulus in cases in the Gold Coast. This ocular pathology problem should be the concern of ophthalmologists."

So much for Dr. Guerrero. We have used italics on the more pertinent data to demonstrate clearly that the physician was dealing with onchocerciasis without realizing it, and this disease would be now known as "Guerrero disease" if he had had the foresight to excise and open some of the tumors he observed, which he probably thought as harmless and unimportant as Robles did at the beginning. As we said before, nothing justifies a discussion on priority in the discovery of the disease. In this discussion by Guerrero, however, he speaks already of "Coastal erysipelas" and ocular lesions leading to blindness, keratitis and blepharospasm, and even of the dark pigmentation and trachomalike symptoms described by Quevedo in 1941. He also delimits the geographic appearance of the disease, marking a borderline at Yecapala although he denies the popular belief that the disease is transmitted by simulidae.

Even after Robles demonstrated the parasitic nature had already of the disease and Onchocerca volvulus as the causative agent, Guerrero continued to defend his theory that myxedema was the cause of both symptoms. Several physicians of the time took sides in this famous polemic, such as Epaminondas Quintana, Carlos Fletes Saenz, Adolfo Reti and Rafael Morales [35–38]. When several years later the presence of filariae in the affected and in the healthy skin of patients was discovered, the discussion leaned strongly to the side of those who considered both symptoms as a result of filariae infestation.

The story of Robles’ disease in Guatemala involves other surprising and curious facts, such as the following. The discovery of microfilariae in the human skin is attributed to O’Neil in 1875 in cases in the Gold Coast. Montpellier and Lacroix observed them in African troops in 1920 and Dr. Blacklock observed them also in Africa in 1926. In Guatemala, according to Gaxiola Muhlens was the first to observe them about 1930 or 1932. It is here that we encounter a strange surprise.

In 1922, J. W. S. Macfie on repeated occasions observed microfilariae of Onchocerca volvulus in the skin of patients in the Gold Coast, and based his diagnosis of onchocerciasis on the presence of the parasite in the skin. In the April and May, 1923 issues of “La Juventud Medica” [39], our local medical journal, a paper by Macfie and Carson was published, where they repeatedly indicate the procedure followed to locate microfilariae in the skin, and the curious thing is that at the foot of the page the following note from the chief editor appears: “The above paper which was published previously by the Annals of Tropical Medicine and Parasitology of Liverpool was sent to us by Dr. J. W. S. Macfie, one of the authors, with a letter stating that he had been examining some specimens of Guatemalan onchocerca which were no different than the ones he had studied in the Gold Coast of Africa. We reproduce the paper here so that the investigators working on this problem in the endemic areas can adopt the technology developed by the authors for detecting the presence of larvae in patients’ skin”.

This footnote probably went unnoticed by all those working on Robles’ disease at the time; otherwise we cannot understand why so many years elapsed before somebody discovered microfilariae in the skin of Guatemalan patients in spite of having access to the technique for doing so, and in spite of the fact that they had been urged to put this technique into practice. Dr. Carlos Estevez, who has contributed a great deal to the understanding of the histopathological aspects of the disease, told me that the microfilariae were not detected sooner in the skin of patients because everybody was influenced by the toxin theory pronounced by Robles and backed up later on by Victor Manul Galderon in his M. D. thesis on Robles’ disease published in June, 1920. We believe, however, that no matter how influenced by this suggestion, anybody would have been able to detect microfilariae in the skin if he had just read that footnote published in 1923, and for this reason we must come to the conclusion that nobody read or paid any attention to it.

It should be mentioned that based on that footnote, Macfie was the first to ascertain that there was no difference between Onchocerca volvulus, Leukart, 1893 and Onchocerca cuacienis, Brumpt, 1919 a fact which was later corroborated by all authors.

This is the main sequence events in the history of Robles’ disease, although we must mention in passing that other Guatemalan investigators have made substantial contributions to the understanding of the disease, such as Drs. Romeo de Leon, Carlos Estevez, Francisco Diaz and Miguel Munoz Ochoa, whose results have been published in national and international journals.

In 1917 the first photographs of patients and parasites were taken by Tacito Molina Izquierdo and the then high school graduate Victor Manuel Calderon [40]. In 1920, Calderon wrote the first continental thesis where he summarizes the known facts and theories on the disease up to 1920. Dr. Carlos Federico Mora was the first to call attention to the mental disturbance which sometimes accompanied the disease.

Finally, it should not be forgotten that the first complete work on Robles’ disease was the monograph publish-
ed in 1934 edited by the Harvard University Press, Cambridge, which deals with the interesting work carried out by the expedition headed by Dr. Strong. In mentioning this work we enter into the field of collective action in the fight against the disease, leaving aside individual contributions. Since this is beyond the scope of the present monograph we will only mention that work without further comments.

The knowledge of Robles’ disease acquired through the work of its discoverer and other investigators brought to light the danger of this disease and from then on, governments, scientific institutions, congresses and local and international conferences have undertaken the task of continuing that work in order to finally eradicate the disease.

With that objective in mind, the Section on Onchocercosis of the Public Health Service was created in Guatemala. In 1934 the first mixed committee was integrated with Guatemalan and Mexican members as well as representatives of the Pan American Sanitary Bureau, to study Robles’ disease in all its aspects. In 1951, the First International Conference on Onchocerciasis was held in Tapachula, Mexico. In 1958, the National Technical Council for the Eradication of Robles’ was instituted in Guatemala.

We hope that in time some effective chemical compound will be discovered that circulating through the lymphatic system will make impossible the proliferation of filarial and microfilariae, will restore sight to those who are partially blind due to ROBLES’ DISEASE, and will prevent the causative agent, *Onchocerca volvulus*, to continue with impunity and despite scientific progress to cause blindness in its hosts.

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