

ELECTRIC MOUNTAINS

Léo Aegerter's maps of the Pyrenees and Catalonia

by M. Carme Montaner

At the beginning of the 20th century, there were no topographic maps of the Catalan mountains in Spain. The hydro-electric projects in this area started at that time, and Swiss and Canadian companies sent their topographers to work mainly in the South-eastern Pyrenees. One of the cartographers was Léo Aegerter (1875-1953), a mapmaker with long experience in relief cartography in the Alps. Aegerter went to Catalonia at the beginning of World War I and he got in touch with local hiking clubs. His presence provided a stimulus to the mountain cartography in the region. Aegerter published, under the auspices of those clubs, some mountain maps at 1:10 000 and 1:50 000 scales of a quality never seen before in Catalonia. An exhibition about his maps was organized in Barcelona, and he even planned to make a relief model. However, financial problems forced him to leave Catalonia in 1924. The accuracy of Aegerter's maps of the area was not surpassed until the second half of the 20th century.

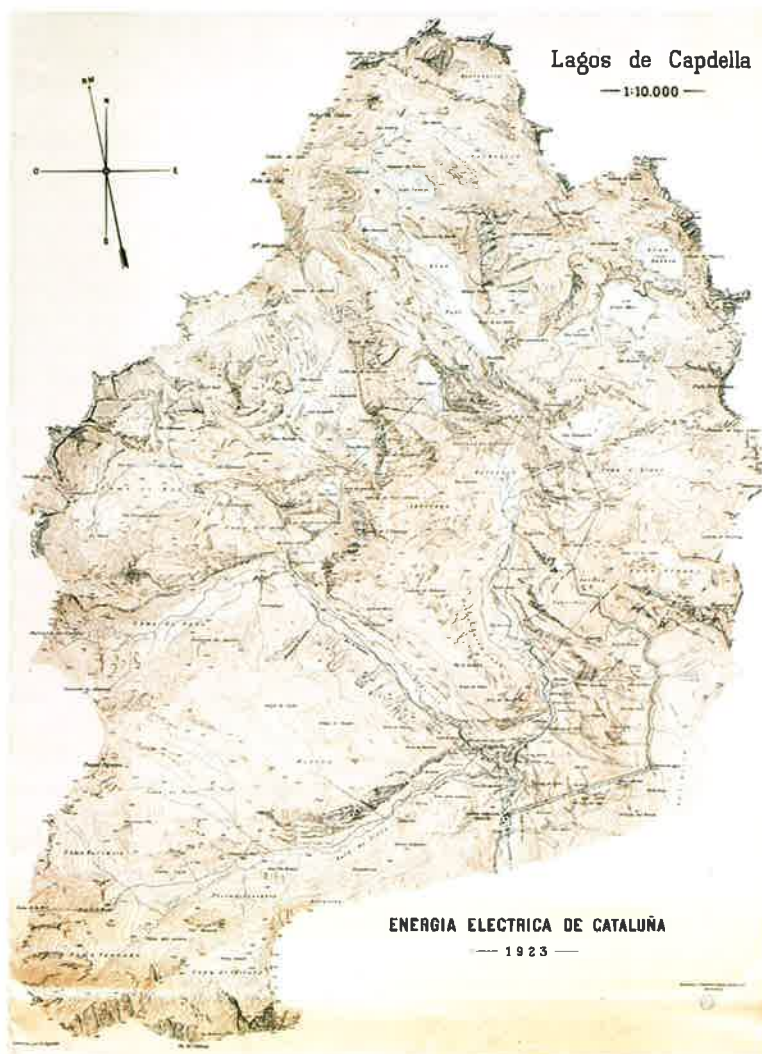
One of the energy sources which became increasingly important from the late 19th century onwards was hydro-electricity, that is, production of electricity by harnessing the driving force of river water. In the case of Catalonia, similar to what happened in Lombardy and Piedmont, the production of hydro-electric power put an end to the serious power shortage affecting the economy during the 19th century. Consequently, throughout the 20th century, an integrated hydro-electric conquest of Catalan territory took place, to produce ever more kWh. The proximity of a mountain range like the Pyrenees to an urban and industrial centre such as Barcelona and its suburbs led to very rapid development in the exploitation of this energy resource.

Major projects in Catalonia were to start in the first half of the 20th century. They were undertaken primarily by private companies financed with foreign capital. At the beginning of 1914, the first large hydro-electric power station, that of Cabdella in the Pyrenees, came into operation, later followed by that of Sant Antoni on the Noguera Pallaresa river which, at the time of building, was the highest in Europe.

Topographical cartography of the Pyrenees and Catalonia

In the early 20th century, publication of the 1:50,000 topographical Map of Spain had only just started, and it was to take many years for it to reach the Pyrenees area. Throughout the 19th century, various political circumstances had delayed geodesic calculations and topographical measurements for this map, made by the Instituto Geográfico y Estadístico, only created in 1870.

Fig. 1
'Lagos de Capdella'
at a scale of
1:10,000 (1922-
1923) by Léo
Aegerter, published
by the *Energia
Eléctrica de
Cataluña* (by
courtesy of the *Fons
Fecsa Institut
Cartogràfic de
Catalunya.
Cartoteca*)



The start of major hydro-electric building projects in the Pyrenees, and elsewhere in Catalonia, met with a void in topographical cartography not only at large scale, but also at medium scale. Considering that we are dealing – in the case of the Pyrenees – with a frontier zone, an overall topographical map was non-existent, and the few partial maps barely covered, at the most, 10% of the territory. The first triangulation network had, however, been completed and calculation for the second stage started, but only in a few areas in the south of Catalonia.

Attention had been drawn to this lack of cartography by Catalan society, since the existence of maps was a basic tool for the industrial development of the country. But it was, above all, hiking organisations (associations actively involved in the acquisition of knowledge and 'discovery' of the country) which never tired of demanding from the government, time and time again, that the necessary resources be channelled into the production and publication of the sheets corresponding to Catalonia (7.7%), from the 1:50,000 topographical map of Spain. It is worth mentioning the most active association, the Centre Excursionista de Catalunya created in 1891, which was to play an outstanding part in these activities.

It is hardly surprising that, from the mid 19th century, French mountaineers from the Club Alpin Français had been occupied in the drawing of topographical maps for hikers covering the most spectacular corners of the southern slopes of the Pyrenees, given the absence of any type of detailed cartographical material. Names such as those of Franz Schrader (1844-1921), Aymar d'Arlot, Comte de Saint Saud (1853-1951) or Edouard Wallon (1829-1891) have gone into the history of cartography as a result of their work in this zone.

Most of the major hydro-electric projects in Catalonia, and elsewhere on the southern slopes of the Pyrenees, were carried out by foreign companies, especially of Swiss, French and Canadian origin. These companies brought technicians, among them the cartographers who surveyed thousands of hectares all over the country. They produced maps – only of the zones affected by a specific project – at scales of 1:50,000, 1:5,000, 1:2,000 and 1:1,000, mostly made using tachymetric systems. In most cases, especially at the beginning, the plans were not even referenced to the grid of the Instituto Geográfico y Estadístico and, for the contour lines, an arbitrary zero line was usually established.

A large part of this cartography remained in manuscript form and had very little, if any, diffusion. Once a project had been completed, the maps went into the company archives, and it is

only in the last few years that we have had access to some of these. In 1992 the cartographical archive of one of these companies (FECSA) was ceded to the map library of the Cartographic Institute of Catalonia, through which it was made available to the public.

Despite the fact that in the first decades of the 20th century this cartographical information was for the exclusive use of the companies themselves, hikers soon heard of its existence. At the time, the Catalan hiking organisations made a decisive contribution to topographical cartography, both on the educational side – organisation of courses, exhibitions, opening of map libraries – as well as on the side of publicity by making the latest works known to the public, and by encouraging printing of maps despite limited resources.

Hiking maps of Catalonia published by the firm Locher S.A.

It was above all the Centre Excursionista de Catalunya, which showed an immediate interest in publishing some of the maps made by the hydro-electric companies, so as to offset the serious deficit in cartographical material covering the Catalan mountains. The association contacted a number of the engineering firms working in the area, among them the Swiss Locher S.A.

Although relations between the two organisations are not well documented, the maps which were eventually published remain as testimonies, and mark a turning point in the standard of topographical mountaineering cartography in Catalonia, not to be exceeded for many years.

The first dealings between the CEC and the firm Locher are listed for us from the year 1922: a first topographical map of a mountain area in Catalonia was published, with a degree of detail not seen before. It was the 'Mapa del Cadí' at a scale of 1:50,000, published by the Co-operativa de Fluído Eléctrico, with contour lines every 50 metres, the steepest rock faces shown, and with a clear, modern design. This map was obviously published in Switzerland. It was signed by Léo Aegerter for the Locher S.A. firm and was printed at the prestigious geographical establishment Kümmerly & Frey of Bern, one of the most renowned cartographical publishers in Europe.

There are two editions of this map. One without any name and probably published in a 'report' of the company, but another one was published in the *Bulletí del CEC*. In these editions the author and publishing house are listed, probably because the Swiss cartographic products were well known among members of the society. The place names are in Catalan but there is no indication of how they were collected.

Fig. 2 (opposite)
'Mapa del Cadí' at
1:50,000 (1922) by
Léo Aegerter.
Kümmerly & Frey.
Co-operativa de
Fluído Eléctrico.
Reprint in the
Bulletí del
Centre
Excursionista de
Catalunya 1923.
(by courtesy of the
Institut Cartogràfic
de Catalunya.
Cartoteca)



Fig. 4
(far right) A reservoir in the Pyrenees under construction. Taken from the book by J.M. Martínez Roig, *Construcció de la presa de Camarasa*. Barcelona, Fecsa 1995 p.36.

Fig. 3
'Mapa del Montseny', also at 1:50,000 (1925) by Léo Aegerter. Published by the Centre Excursionista de Catalunya (by courtesy of the Institut Cartogràfic de Catalunya. Cartoteca)

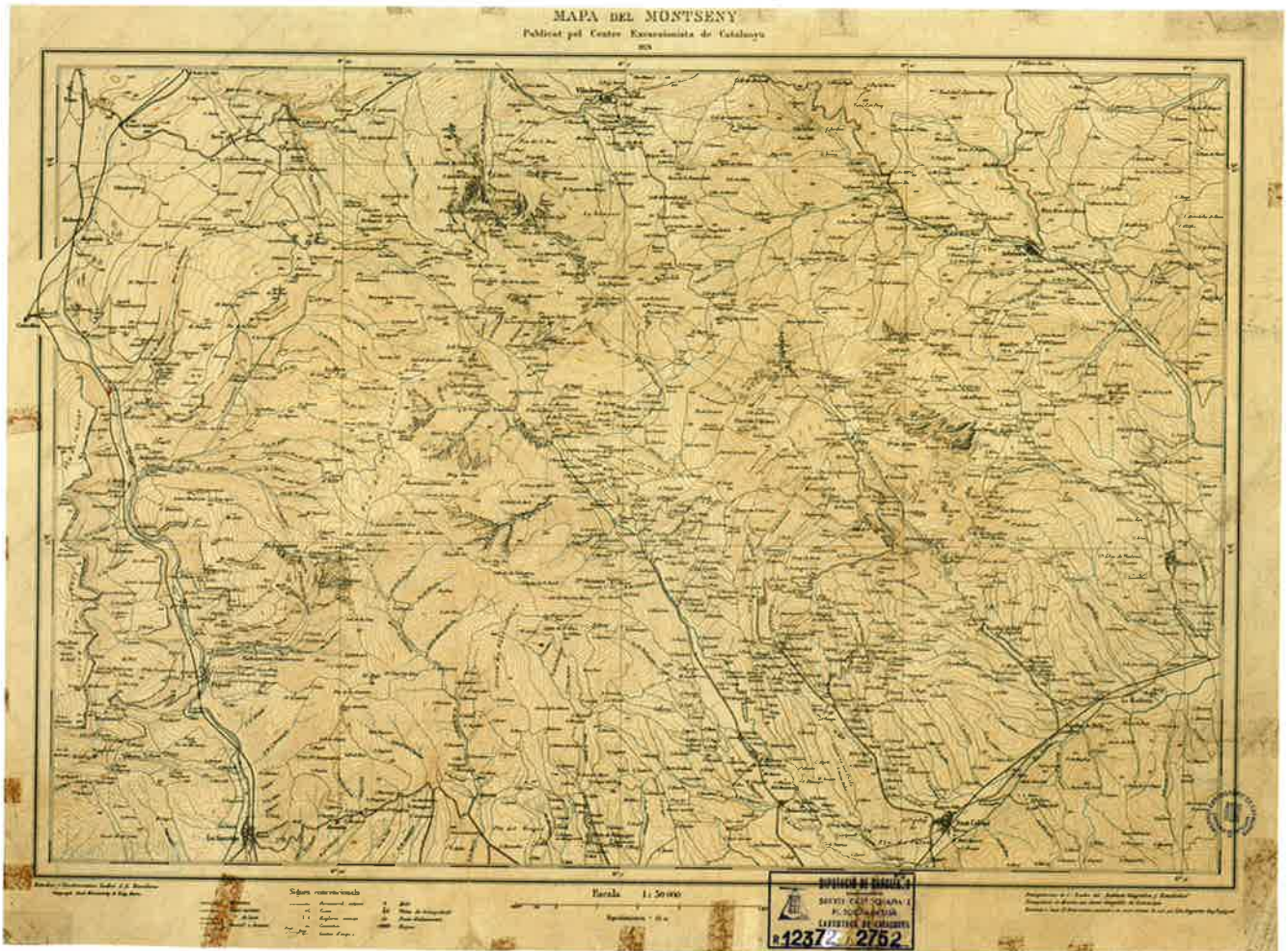
In 1922 the Locher firm and the CEC signed a contract to publish a map of the Montseny Massif which culminated in publication of a map in 1924. It must be pointed out that this massif is a long way from the Pyrenees, the area where the major work in hydro-electric power production was going on, but is relatively close to Barcelona which in the 1920s was still without a single detailed map. The sheets of the 1:50,000 topographical map of Spain, which was being drawn up by the Instituto Geográfico y Estadístico to cover this area, did not come out until the 1940s.

On 15th July, 1922 a contract was signed between the Centre Excursionista de Catalunya and the firm Locher S.A. who were commissioned to produce a map of Montseny at a scale of 1:50,000. The contract specified that production of the map, with contour lines every 25 metres, was to be carried out by Léo Aegerter, using existing partial cartography, and with new surveys for those areas where maps were lacking (estimated at around 50 sq km). The use of the plane table, or of tachymetric measurements, is specified for the surveying work. Mention is also made of the fact that the map is for tourist use, with all kinds of

information on road networks, paths, villages, houses etc. The publishing company is not named, but an edition of 5,000 copies was expected, a surprising figure for the period. The total price of the map was 9,500 pesetas (approximately €69).

It is remarkable that the author – Aegerter – is instructed to use the toponymy approved and corrected by the Centre Excursionista. It should be borne in mind that this toponymy was in the Catalan language. We have found, in fact, in the CEC archives, letters sent by this organisation to all the parish priests asking for details of local place names. So, in this sense, considerable work in the gathering of information was carried out.

The 'Mapa del Montseny' was published in 1924 and, once again, the company Kümmerly & Frey was responsible for its publication. This map constitutes an outstanding contribution by mountaineering to cartography in Catalonia and was, without doubt, influenced by work being done in mapping the Alps. Without the presence of the hydro-electric engineering companies, it is hard to see how maps of this calibre could have been published in Catalonia in the 1920s.



In 1923, between the two projects, *Energia Eléctrica de Catalunya* published a map of the Cabdella zone at a scale of 1:10,000, also drawn by Léo Aegerter for the Locher S.A. firm. This had contour lines every 10 metres. The scale of the map is rather surprising considering many parts of the Pyrenees had still not been surveyed topographically. Nothing indicates the intervention of the CEC in the publication of this map.

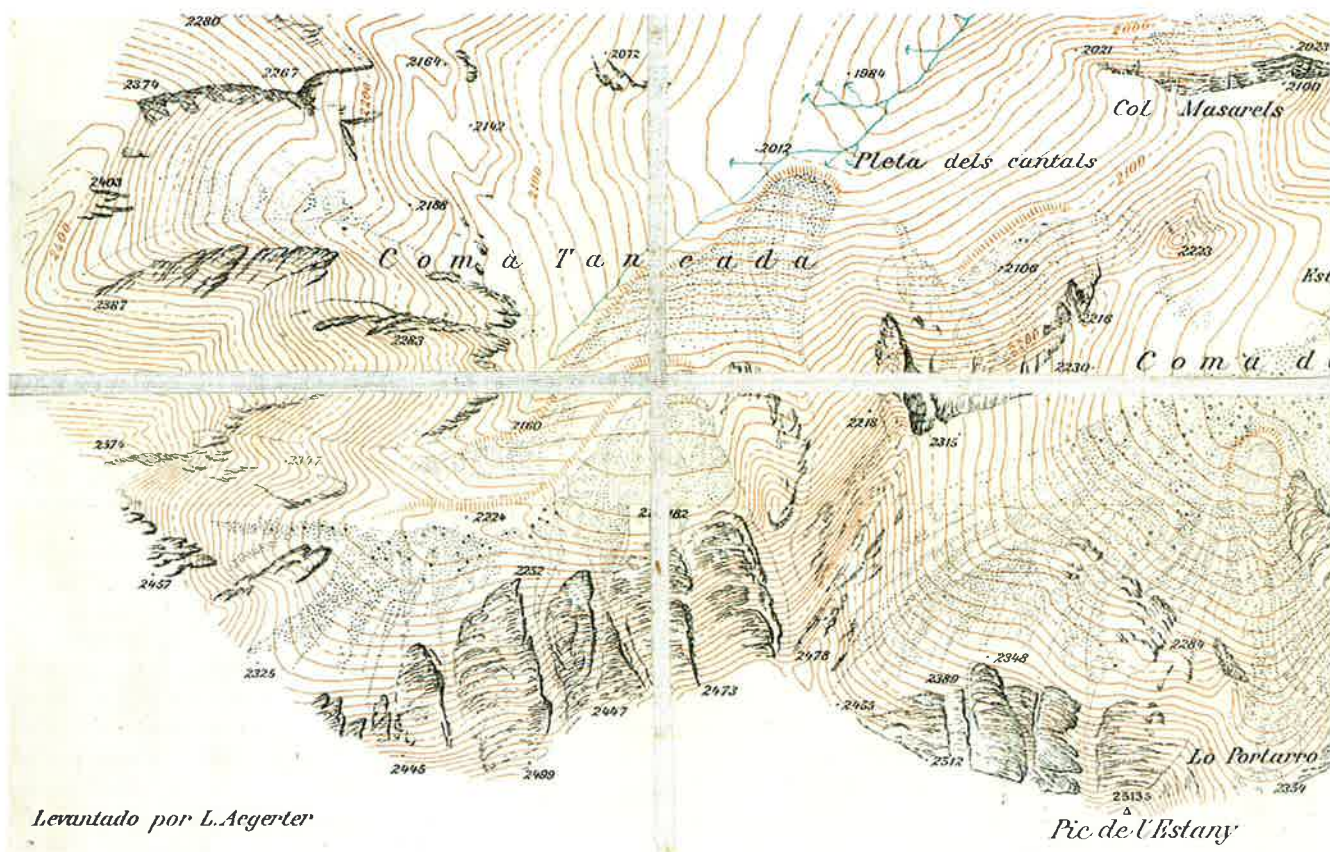
In fact, everything points to there being a real demand for topographical cartography of hiking areas, since other companies also published maps, such as the one of the Tavascan zone at the same scale of 1:10,000, produced by the *Société Française de Stéréotopographie*, another of the firms involved in the major hydro-electric projects in the Catalan Pyrenees.

Léo Aegerter in Catalonia

Apart from his professional relationship with the Locher company we know that Léo Aegerter also had personal connections with the Centre Excursionista de Catalunya. His fame as a cartographer reached Barcelona and in 1924 the association organised an important exhibition of topographical maps and mountain perspectives done by him. This shows there was explicit recognition of his work.

Léo Aegerter (Paris, 1875 – Zirl, Innsbruck, 1953), the Swiss topographical engineer – despite being born in Paris – was regarded as one of the great cartographers of the Alpine region prior to the introduction of photogrammetry. From 1897 onwards he was an assistant to the prestigious cartographer Simon Simon (1857-1925) and up to 1935 he drew numerous maps of the Alps for the *Deutscher und Österreichischer Alpenverein* (German and Austrian Alpine Club). He also worked with Fridolin Becker and produced many relief maps. From 1945 he carried out several cartographic projects in Switzerland and is regarded

Fig.5 (bottom)
A section from Aegerter's map 'Lagos de Capdella' published by the *Energia Eléctrica de Catalunya* (by courtesy of the *Fons Fecsa Institut Cartogràfic de Catalunya*. *Cartoteca*)



as one of the creators of modern alpine cartography.

It seems that after the First World War Aegerter lost his job and about 1920 came to work in Catalonia with the Swiss company Locher S.A. However, within Catalonia, not many specific references to the bibliography of this cartographer can be found, despite his often being cited in histories of Alpine mountain cartography. As a result, we lack details of his private life in connection with the First World War, information which could have influenced his moving to our country. From this period of his professional life, we have only found a reference to an interview he gave in 1927, reproduced in the magazine *Berge und Heimat* in 1953 in his obituary. Aegerter explains that at the end of the First World War the Austrian Alpine Society was penniless and he himself had to look for work, which is when he moved to Spain. It mentions that he spent four years there but finally had to return because all the companies – those with local capital, just as those with foreign money – were extremely speculative and finally went bankrupt.

Notwithstanding the excellent cartographic work Aegerter did for the Locher firm, it seems that he finally ended up unemployed. In a letter addressed to the CEC dated 29th August, 1924, he offers to create a relief map of Catalonia which, in his own words, ought to be made for the following reasons: 'In the first place, it would be a general means of propaganda for Catalonia (movements of foreigners and tourism) and then it would be for the education of youth, for the love of Nature and the Homeland in schools, and finally it would be an intermediary in the study of geographic science.'¹ The end of the letter reveals his personal situation, requesting a prompt reply on the part of the CEC since, as he says, 'others are to blame' for his being out of work, and he has been left with few assets. This is the last reference to Aegerter in Catalonia.

There is no doubt that without the presence of Léo Aegerter and the firm Locher S.A., these topographical hiking maps of Catalonia would never have been published in the 1920s. His presence allowed a small sample of the mapping tradition of the Alps to be imported into the mountains of Catalonia.

Notes

1. Letter from L. Aegerter addressed to the Board of the CEC, dated August 29th 1924 (CEC Archives)

Further reading

N.Broc, 'La montagne, la carte et l'alpinisme (1815-1925)' in *Images de la montagne*. Paris: Bibliothèque Nationale, 1984.

Rosa Anna Felip, *Fer país, conèixer món: la cartoteca del Centre Excursionista de Catalunya*. Barcelona: Centre Excursionista de Catalunya, Institut d'Estudis Catalans, 2008.

Carme Montaner, 'Mapes topogràfics per a projectes hidroelèctrics a Catalunya (1890-1936)' In *Documents d'Anàlisi Geogràfica*, núm. 32 (1988), pp.161-174.

M.C. Montaner, *Mapes i cartògrafs a la Catalunya contemporània (1833-1941)*. Barcelona: Rafael Dalmau editor; Institut Cartogràfic de Catalunya, 2000.

Luis Urteaga, Francesc Nadal, *Las series del mapa topográfico de España a escala 1:50.000* Madrid Instituto Geográfico Nacional, 2001



Carme Montaner holds a doctorate in Geography (University of Barcelona, 1995) with a Ph.D. in history of cartography: 'Topographic mapping in Catalonia: from private initiatives to the regional administrative projects (1833-1941)'. Until 1982 she was a cartographer at the Institut Cartogràfic de Catalunya (ICC) in Barcelona and has been in charge of their Map Library of Catalonia since 2001. She has been involved in numerous research projects related to topographical maps of the 19th and 20th centuries of Catalan and Spanish territories and has also published articles and books related to maps: *Mapes i cartògrafs a la Catalunya contemporània* (2000); *Cartografia de la provincia de Barcelona* (2003); *Imago Cataloniae* (2005); *Els mapes en la guerra civil espanyola 1936-1939* (2007) with F. Nadal and L.Urteaga. Carme is a member of the research group on the history of cartography which involves researchers from several different Catalan Universities.