

# Charles Jacot-Guillarmod – One of the Pioneers of the Swiss Style of Rock Representation

**Hans-Uli Feldmann**  
**Cartographica Helvetica, Switzerland**

## **Abstract**

*The topographer Charles Jacot-Guillarmod (1868–1925) was responsible for cliff representation in the Topographical Atlas of Switzerland and thus also in the modern national maps. His name is almost absent in the technical literature of the time which leads to the assumption that he was bullied at work. He created two "topographical sketches" of the Chogori or K2 and Kangchenjunga which are the first exact maps of the Himalaya massif. He also drew various large-format panoramas and in 1923 the cliff representation for the Carte du Mont Olympe, and in 1925 was a topographic map of Mount Everest in the scale 1:63,360 in commission of the Royal Geographical Society.*

## **1. Introduction**

Charles Jacot-Guillarmod [C.J.G.] (1868–1925) was a very talented topographer (Fig. 1). It is thanks to his knowledge that he was jointly responsible for rock representation in the Topographical Atlas of Switzerland 1:25,000 and 1:50,000 (the so-called Siegfried Map) and thus also in the modern national maps (Fig. 2 + 3). Even though over a period of 24 years (1890–1914) he was active in the Federal Topographic Office and contributed a great deal to the representation of the large-scale mountain maps, his name is remarkably absent in the technical literature of the time. This fact as well as the procedure of his dismissal leads to the assumption that he was a victim of bullying at the workplace.

## **2. The K2 and Kangchenjunga maps**

Following his dismissal from the federal services in 1914, he created two "topographic sketches" of the Chogori ou K2 and Kangchenjunga based on terrestrial photographs taken by his cousin and Himalaya researcher Jules Jacot-Guillarmod (1868–1925), and on marvelous photographic material from the Italian Vittorio Sella (member of the Duke of Abruzzi's expedition). The two original drawings at the scale of 1:50,000 with 100 m contours are the first exact maps of the Himalaya massif. They were lithographed by Kümmerly & Frey in Bern and published in the Bulletin de la Société Neuchâteloise de Géographie in 1925.

C.J.G. reported some interesting details about the two maps. For the map of K2 (Fig. 4) the author used observations made by Filippo de Filippi who had accompanied the Duke of Abruzzi's [Luigi Amedeo from Savoy] research expedition in 1909 as a topographer. The positions of the photographic stations had been carefully calculated through triangulation using a photo theodolite, which yielded a very precise network of control points. Based on this triangulation network, all C.J.G. had to do was to draw the rocks and the contour lines using the photographs. Thanks to this



*Fig. 1: Charles Jacot-Guillarmod, topographer and cartographer (1868–1925). Photograph approx. 1890. (© swisstopo map archive).*

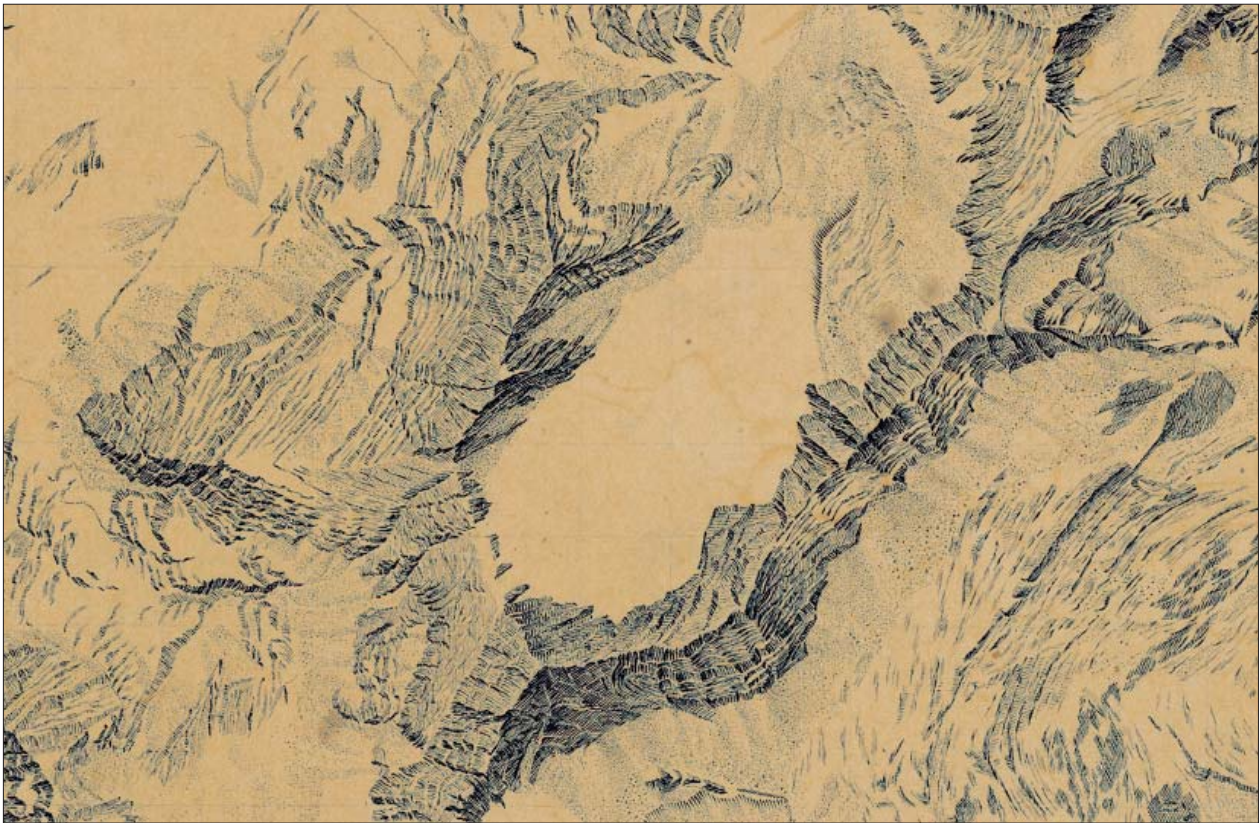


Fig. 2: Map specimen for the Siegfried Map, sheet 480 Anzeindaz, 1:25,000. Rock drawing by Ch. Jacot-Guillarmod (approx. 1906). (© swisstopo map archive).

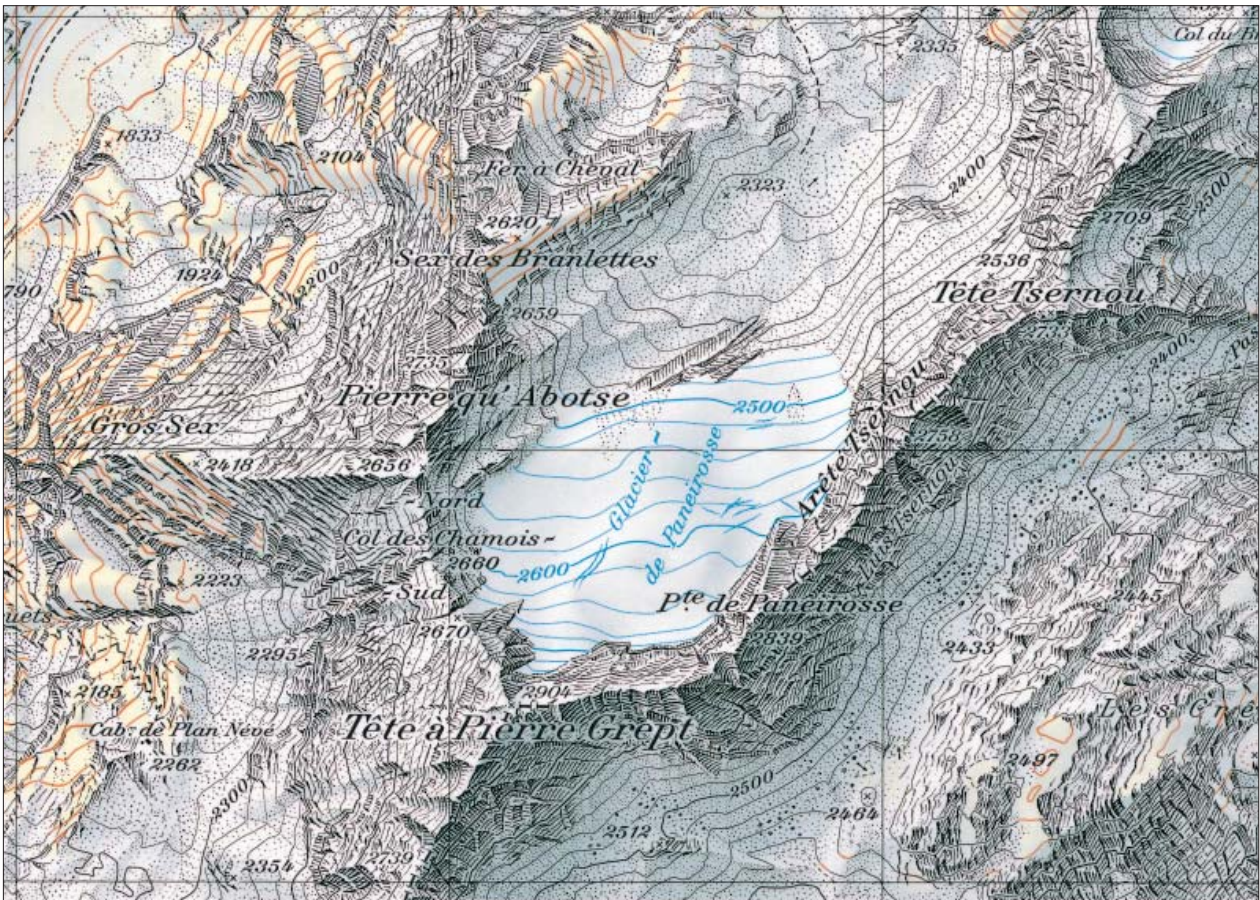


Fig. 3: Swiss National Map, sheet 1285 Les Diablerets, 1:25,000 (1998). A comparison of this map with Fig. 2 shows how Ch. Jacot-Guillarmod succeeded in creating an extraordinary terrain representation – even though he did not have any perpendicular aerial photographs at his disposal (© Federal Office of Topography swisstopo).

reliable base, his drawings are absolutely comparable to an Alpine survey.

The map of Kangchenjunga, however, is much less precise (Fig. 5). The photographs from Jules Jacot-Guillarmod's expedition in 1905 were taken by a hand-held Vérascopie (stereo camera) and were usually not perpendicular. The positions and height of the stations were calculated by a graphic construction based on four triangulation points in India: the Jannu, the two summits of the Kangchenjungas and the Kabru. Fortunately, a complete view of the horizon was observed with the Vérascopie mounted on a tripod on point 4973, located in the center of the Yalung cirque. Even though the instrument height was not measured, it was still possible to determine the position of the station using the four above-mentioned summits. The approximate inclination angle was interpolated by means of the heights of the summits. From there on it was easy to calculate the points. They are shown in blue on the map. The values are rounded to the nearest 10 meters, indicating that the heights of these points are only approximate.

The north face of the Kangchenjunga was drawn using a good photograph taken by Vittorio Sella in 1899 during the Freshfield expedition. The position of the station, the instrument height, the orientation and even the focal length of the camera were all unknown. It was necessary to use

the distance between the summit of the Kangchenjunga and point 7863 which was known from the triangulation of India. C.J.G. describes how vast experience is necessary to be able to determine the positions of points or the contour intervals using only the slope inclinations from photographs. For that reason the south face had to be drawn first so that the results of the interpolation could be compared to the other two faces.

### 3. The Mon Olympe map

From 1916 to 1922 C.J.G. taught geodesy and topography at the Central Army Surveying School in Peking. After his return to Switzerland he drew various large-format panoramas and in 1923 the rock representation for the Carte du Mont Olympe, the first topographic map of this mountain massif at the scale of 1:20,000 with 20 m contour intervals (Fig.6).

### 4. The Mount Everest map

His last achievement in 1925 was a topographic map of Mount Everest commissioned by the Royal Geographical Society in London. The map was based on terrestrial photographs and surveying results made by two British expeditions and published at the scale of 1:63,360. Besides the work itself, it is fascinating that he even received the man-

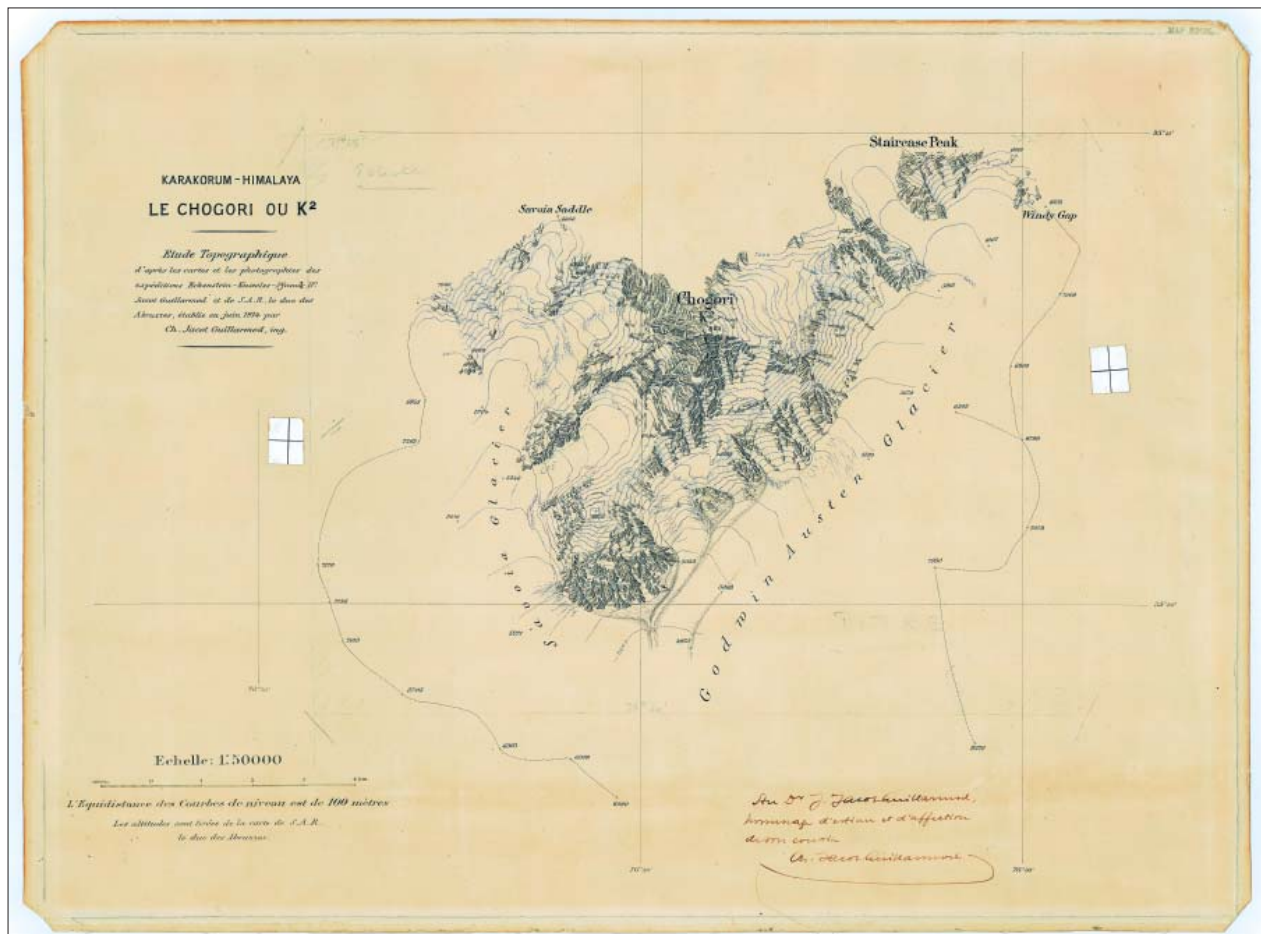


Fig. 4: Le Chogori ou K2. Etude Topographique d'après les cartes et les photographies des expéditions Eckenstein – Knowles – Pfannl – Dr. Jacot Guillarmod et de S.A.R. le duc des Abruzzes, établie en juin 1914 par Ch. Jacot Guillarmod, ing. Original drawing at the scale 1:50,000, contour interval 100 m. Extract reduced. (Private collection).

date in the first place, and also to realize in what short a time the undertaking was achieved. The various aspects that were involved are very impressive:

- quality awareness
- entrepreneurial commitment and risks
- time factor
- costs
- logistics
- language problems
- human relationships

This effort can be only highly regarded in light of the situation at that time without a phone, fax or the Internet, and the railroad being the only means of public transportation. The story of how this mandate to draw a map of Mount Everest came into being began on

4.2.1925. Letter Hinks → Montagnier:

Arthur R. Hinks, Secretary of the Royal Geographical Society (RGS) wrote Swiss publisher Henry F. Montagnier, whom he knew, a letter. The RGS wants to publish a book about Major Wheeler's Everest expedition. Because the cartographers at the RGS were already overloaded with work, he asks Montagnier to find out if C.J.G. would be willing

to draft a map of Mount Everest using surveying data and photographs by Wheeler, and what that would cost.

5.2.1925. Memorandum Hinks → Mount Everest Committee:

1. Hinks points out the lack of human resources at the RGS. 2. He had heard from Mr. Montagnier that C.J.G. had drawn a panorama for him, but otherwise didn't have many orders. Hinks proposes to commission C.J.G. with creating a map of Mount Everest if his offer were not too costly. 3. *C.J.G. is undoubtedly the world's most gifted draftsman for topographic maps of high mountains. Besides a map of the Kanchenjunga, he had also made one of Mount Olympus for Marcel Kunz.* The Committee disposes of the necessary financial means and the expenses would guarantee the best possible map, not only for the book itself but also for geography in general.

7.2.1925. Letter Montagnier → Hinks:

Writes that he has written C.J.G. and is certain that he is the right man for this task. Montagnier invites Hinks to visit him in Geneva where he will be staying at the Hotel de Russie from February 25 for a month.

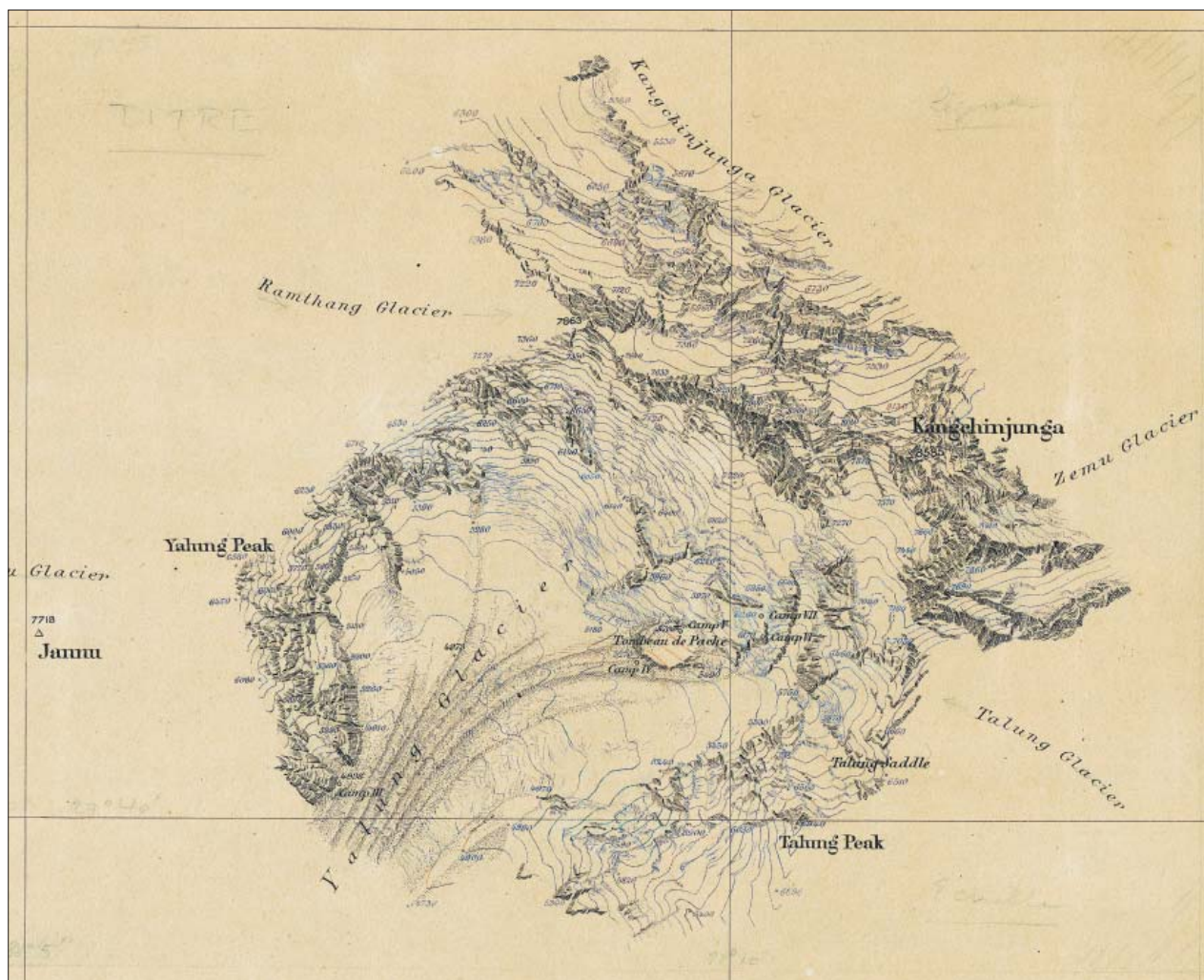


Fig. 5: Kangchenjunga 1:50,000, May 1914. Extract reduced. (Private collection).



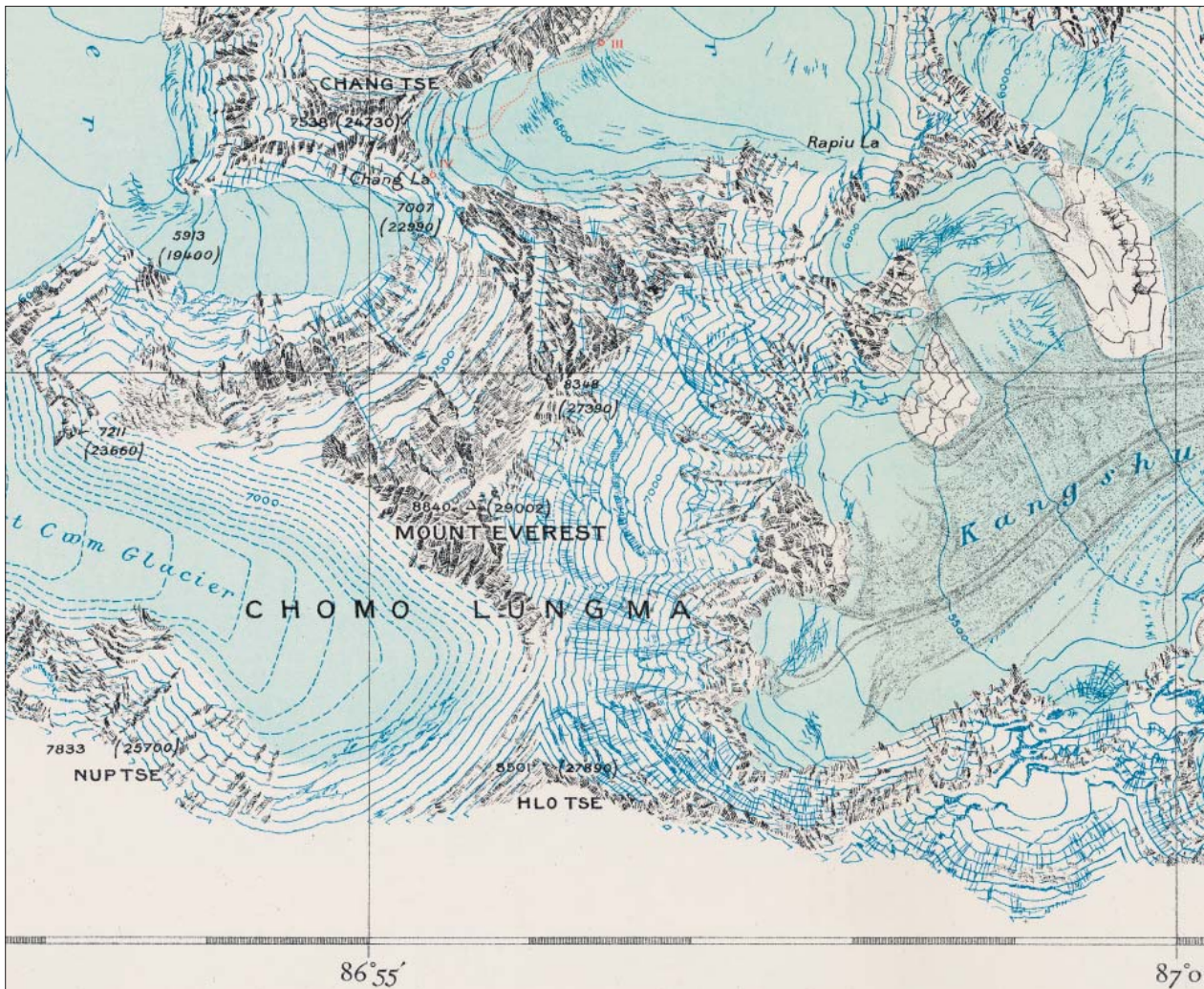


Fig. 7: The map Mount Everest & the Group of Chomo Lungma lithography printing in 4 colors. Scale 1:63,360, contour interval 100 m. Original drawing by Ch. Jacot-Guillarmod (1925).

23.3.1925. Letter C.J.G. → Hinks:

It is a great honor to create an "oeuvre cartographique de l'Everest". He is entirely satisfied with the financial offer. He is only now able to reply because he first had to find out if he would be able to finish a project before leaving for London on April 2 or 3. This will not be possible because he has to finish the Vevey–Montreux map first. Should he come to London already on April 14 or 15, or should he wait until April 20?

His train would arrive in London around 3:20 pm, and he would then proceed to the Marlborough Hotel immediately to meet his RGS colleagues.

25.3.1925. Letter Hinks → C.J.G.:

April 20 will be fine to start work. He will take care of the hotel reservation in writing.

*[...] I am sure that the Committee will count themselves fortunate in having secured your services. Believe me, yours very truly [...].*

2.4.1925. Letter C.J.G. → Hinks:

Confirmation: I will leave here on April 18, spend Sunday in Paris and arrive in London on Monday, April 20 approx. 3:20 pm.

6.4.1925. Memorandum Clerk Mount Everest Committee → C.J.G.:

*Mr. Hinks has asked me to let you know that he duly received this morning your letter of the 2<sup>d</sup> April, and is pleased to hear that you will arrive in London on the 20<sup>th</sup>.*

6.4.1925. Letter Clerk Mount Everest Committee → Manager of Marlborough Hotel, London:

*[...] With reference to Mr. Hinks' enquiry on the telephone some little time ago, Mons. Jacot-Guillarmod is arriving in London from Switzerland in the afternoon of Monday, 20<sup>th</sup> April, and we should be glad if you would reserve for him as nice a room as possible as from that date [...].*

1.7.1925. Letter Hinks → C.J.G.:

Apologizes that he was tied up with business on Friday and was not able to bid farewell to C.J.G. *[...] But I take an early opportunity of thanking you on behalf of the Mount Everest Committee for the admirable work you have*

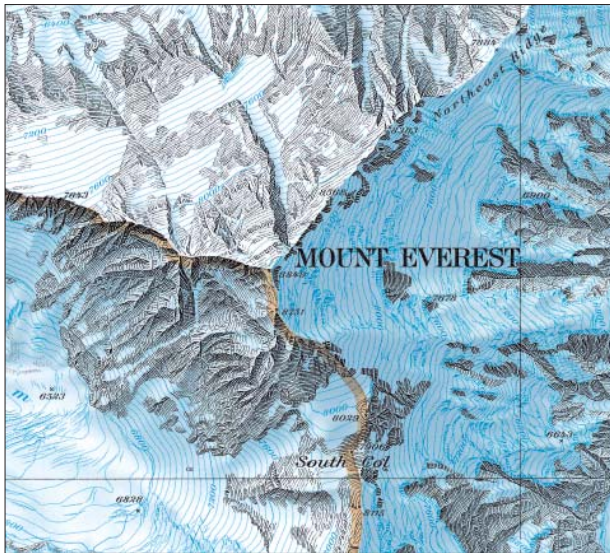


Fig. 8: Mount Everest Map 1:50,000, contour interval 40 m. (© Federal Office of Topography swisstopo, 1988).

*done on the Mount Everest Map. There is no one in the world who could have interpreted the photographs so well and I shall always be personally happy that I had some share in persuading the Mount Everest Committee to entrust the work to you. I am very sorry to read in the papers this morning of the death at Aden of your cousin who was on his way to Central Africa. Will you please accept my most sincere condolence. I shall hope to write again in a few days on the technical questions of the reproduction of the maps, but meanwhile I am very busy after four days absence from London [...].*

5.7.1925. Letter C.J.G. → Hinks:

## References

- Evard, Maurice (2001): Charles Jacot-Guillarmod, cartographe (1868–1925). In: Biographies neuchâteloises. Hauterive, 2001. 205–209.
- Feldmann, Hans-Uli (2005): Der Topograph Charles Jacot-Guillarmod (1868–1925): Einer der Pioniere der Schweizer Felsdarstellung. In: Cartographica Helvetica 31, Murten, 2005, 3–13.
- Royal Geographical Society, London (Archive: Correspondence Hinks/Montagnier/Jacot-Guillarmod, 1925).

Actually it is he who would like to express his gratitude at the warm reception in London. He includes a few notes in the letter which might possibly be of use for his article about the geology of Mt. Everest.

15.8.1925. Obituary C.J.G.

Charles Jacot-Guillarmod passed away on August 14, 1925. The cause of death was a stroke which he incurred during surveying work along a road. Charles Jacot-Guillarmod was one of the pioneers of genetic rock representation as it is still found in today's Swiss topographic maps. He never saw the printed product of his most significant piece of work, the Mt. Everest Map.

The original drawing (2 sheets) of his work which lasted 8 weeks was engraved in stone in the same year and printed in 4 colours (lithography, Fig. 7). The map *Mount Everest & the Group of Chomo Lungma* measuring 50 x 36 cm was bound in a book about the third Mount Everest Expedition.

The quality of the map and especially the rock representation in the style of today's Swiss topographic maps is excellent. A comparison with the present Mount Everest Map at the scale of 1:50,000 by the Federal Office of Topography from 1988 is impressive (Fig. 8). Among other information, C.J.G.'s map shows the position of the photo theodolites as well as the ascent route of the third Mt. Everest Expedition led by Wheeler. C.J.G.'s original drawing is archived at the RGS library in London. The west sheet shows the Kangshung-Glacier, which was not represented on the printed map because of the format.