

# Skyscrapers challenged by subterranean Building!

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## SKYSCRAPERS CHALLENGED BY SUBTERRANEAN BUILDING!

### IN GENEVA SCIENTIFIC REALITY

The Swiss architect, Fritz Jenny, is about to become as famous as his compatriot, Le Corbusier.

Thanks to him we now know that scientific reality can beat fiction; that is to say, that it is possible to construct a seven-storey building on the surface — and then sink it into the sub-soil of a city.

This fabulous achievement, considered as some sort of wild wager, has nevertheless just been signed by Fritz Jenny, the spiritual (and technical) father of the most extraordinary new feat in the building world. It will provide space for 530 cars.

The man who, standing alone, challenged the skyscrapers in advocating building below ground, has won the day.

#### A bold formula

When Fritz Jenny, developing a 17-year-old idea (which he had already put to the test) submitted his project, his interlocuters gasped!

“Since building a seven-storey garage below ground is too costly, involving gigantic excavation work, besides a formidable cyclopean scaffolding to protect it against pressure from the earth, why do we not simply construct the frame of the building on the surface, in a single block and then sink it into the soil afterwards? As the building sinks, it will constitute its own protection as we excavate!”

While this technique was not wholly new (it is utilized in various public works for sinking caissons), the idea of applying it to a work of this size was decidedly revolutionary!

Classical technicians did not hide their scepticism, fearing that nothing could stop the building going on sinking, whilst others, on the contrary, feared that the caisson would not go down at all. But Fritz Jenny persisted, fought and finally succeeded in convincing everybody. His simple and bold idea swept away old accepted ideas; the Rive Garage did sink into the Genevese sub-soil and stopped exactly 2 cm. from the depth fixed.

The Swiss architect has thus opened up vistas which will start a new school of thought.

#### The whole neighbourhood had to be sounded!

If the construction of the caisson did not pose any big problems, this was not so for the excavation work. Due to the proximity of the lake, water was found 4 m. below the surface. This was no surprise; numerous soundings had been made throughout the quarter. The level of the neighbouring streets was taken at some 100 points so as to be quite certain that the soil was stable.

Gigantic pumps were used to evacuate the water whilst the earth, composed chiefly of clay, was extracted with the aid of giant mechanical scoops and cranes. During this time, on the unusual work-yard, a peripheral trench was built for the purpose of receiving the base of the cylinder, that is, of the caisson. So that the latter could be sunk, a metallic plate, to serve as a blade, was fitted under the circular wall, on which subsequently the garages were to be built. The weight of the building did the rest — 40,000 kg. per metre of wall!

#### A miraculous mud

The builders' big worry was: to avoid the friction of the cylinder against the earth's wall during its downward

passage which methodically followed the work of excavation. Mr. Fritz Jenny then had recourse to a wonder-mud — bentonite, which was injected to lubricate the wall just above the “blade”.

Bentonite is a natural product which possesses the property of being solid when immobile and turning liquid as soon as it is in movement. Its composition and behaviour constitute the ideal lubricant for this kind of work.

This provisional and moving sheath was then removed to allow concrete to be poured in, by a process of compression, to ensure an overall rugged surface.

The Rive revolutionary garage, entirely built above ground, then sank into its cage at the regular rate of 15 cm. per day.

It is conceived like a giant screw thread. A spiral road, 800 metres in length, in two circulatory directions, serves for going up and down. It has 265 garages on each side, each large enough to take two cars.

The garage does not therefore consist of horizontal floors designed for parking cars. On the ground floor an ultra-modern cleaning station can handle more than 100 cars per hour.

A seven-storey building is also at present being built on top of the caisson which will not budge by a hair's breadth.

Architects the world over have shown interest in this grandiose achievement, unique of its kind, for a work of such a size. From Tokyo, Paris, New York, Canada, etc., they have come to look at it.

Moscow sent a group of experts to study Fritz Jenny's titanic work.

*René Terrier.*

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