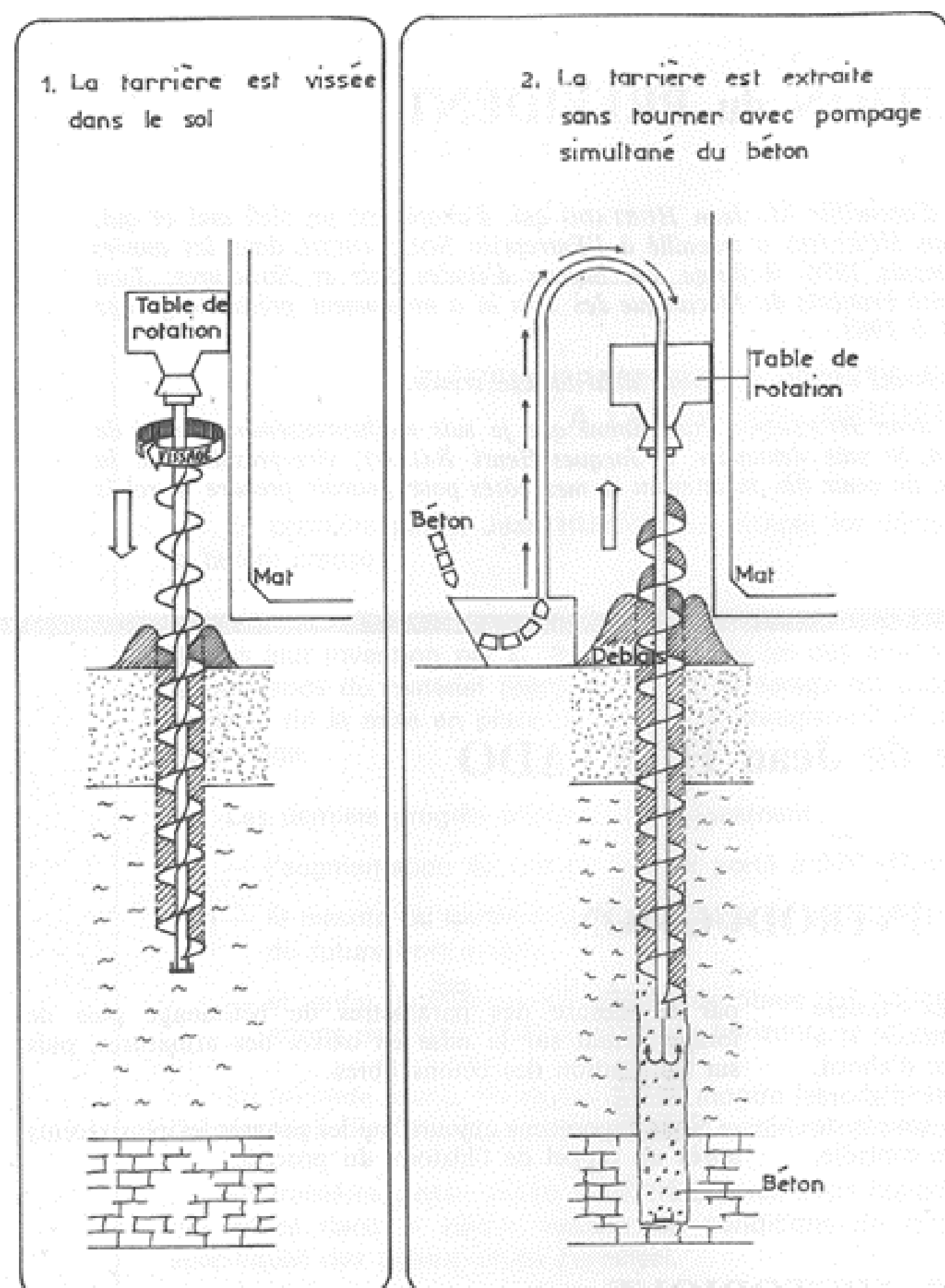


CFA – CONTINUOUS FLIGHT AUGER

Yesterday, today and tomorrow

By **Mustafa AIT ALI**, young member of the French Society for Soil Mechanics and Geotechnical Engineering (CFMS Jeunes),
April 2022.

This poster aims to explain the development of CFA. From the creation of this process through its development until today,
we will ask ourselves the question of its future!



1963

A french invention?

We find the first traces of the CFA in France in 1963. The first name that stands out is Mr. BOURG who developed a solution for screwing prefabricated concrete piles into the ground. However, as the piles are not equipped with reinforcements to take up the torsion generated by screwing, they break very quickly.

It was following this failure that Mr. BOURG planned to use the same machine to attach it to a tube equipped with helical steel blades. To make the pile, this tube is driven into the ground to the depth of the pile to be made. Once the desired depth has been reached, the tube is raised while at the same time injecting the concrete through the core of the tube.

1964

The first construction site

The first project was carried out in Mérignac (France) in 1964, with the installation of 40 piles 12 m deep and 350 mm in diameter in the ground.

1974

Regulations

The basic texts which made it possible to frame this new technique were established by MM. CHADEISSON and BRULOIS in 1974. It was necessary to wait until June 1978 for this work to be published.

In September 1980, the association for the quality of foundations (ASQUAF) drew up specifications for the reinforcement of piles. This ensured the compliance of the foundations executed using CFA with Art. 1.11 of D.T.U 13.2 "Installation of reinforcement cages in the concrete of vertical piles".

2050

The futur of CFA

The main difficulty with deep foundations is that you can't see them. It is thus difficult to observe them to control their quality. To overcome this uncertainty, the standards impose safety coefficients in order to reduce the real capacities of the piles.

If the perfect execution of the foundation could be guaranteed, these safety factors could be reduced. In the future, high-tech auscultation methods such as robotic probes would allow us to auscultate piles and even to have a 3D image.

We could then determine their resistance in order to extend the life of the structure they support.

In case of existing piles, this auscultation would determine their performance to open the possibility of reusing them for a new structure.

1970

Control system

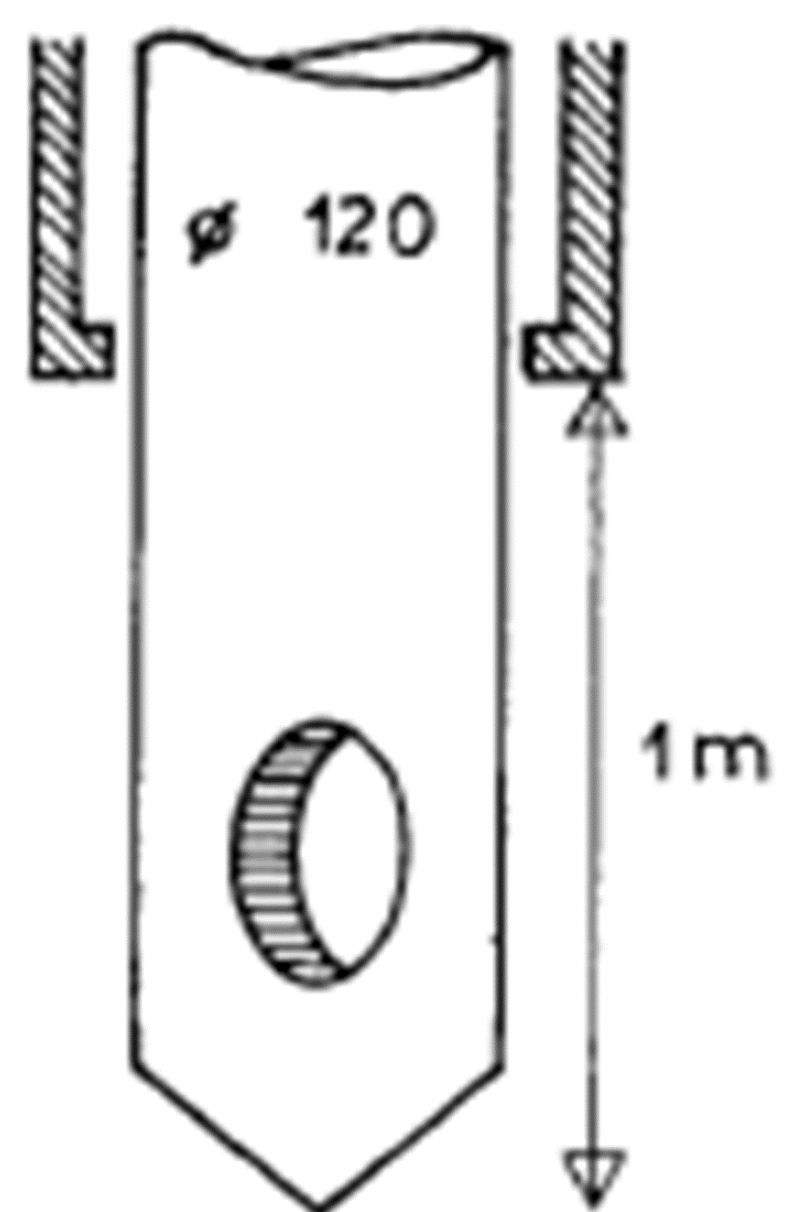


A first control system is set up by Mr. PAREZ. This system controls the correct execution of the pile through the concreting pressure.

1980

Type 3

The CFA experienced a turn in the 1980s with the installation of the first telescopic tube. This tube intervened during the ascent of the auger when the concrete was pumped. This tool allowed the tube to be constantly immersed in the freshly poured concrete.



This guaranteed the quality of the concrete over the entire height of the shaft. The piles made using this new tool are called « CFA type 3 » (fascicule 62 titre V of 1993).