



## **Association des Géologues du Bassin de Paris**

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### **Publication project : « Géologie et Grande Guerre » (Geology and the Great War)**

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From 1914 to 1918 the Western Front crossed the different geological formations of the Paris Basin, from Flanders to the Vosges Mountains.

It naturally fell to the Association of Geologists of the Paris Basin (AGBP) to contribute to the commemorations of the Centenary of the Great War in its field of competence, recalling the somewhat forgotten influence that geology had on the military operations.

In the years of the postwar period, there have been a great number of publications about the geographic and geological conditions of the war. The role of the landscape and the nature of the rocks, the drainage problems of military works and the supply of water to the troops have been discussed in many studies that still are reference works (Brooks, Dudley Stamp, Gregory, Johnson, King, to name only a few English-language authors...).

After a decline of interest in the thirties, the theme is experiencing a revival, particularly in relation to the study of the recent battlefields in desert or mountain areas. New themes are studied, like damage to the environment, and the use of new tools such as remote sensing and geographic information systems enable new approaches.

In this context, the AGBP will publish in 2017 a book describing the geology of the Front and examples of remarkable sites for the role it played there, integrating the experience of the geologists who were witnesses of the Great War and the most recent works.

This work is an extension of the report of the 2014 field trip from Flanders to Champagne, for which AGBP has been awarded the "Centenaire" label, and which has been published in its quarterly Bulletin. In 2016 and 2017 other parts of the Front will be studied in greater depth, in order to present a complete study of the battlefields.

The book, intended for a wide audience, will be conducted by a working group within the AGBP, with the participation of university members and organizations involved in the study and preservation of war sites of geological interest.

The AGBP, who published in 2014 a new synthesis of the Paris Basin which analyzes several Great War sites, intends thus to make an original contribution to the duty of remembrance and commemoration of the Centenary.

### **The role of geology in the war**

The strategy of the belligerent parties was marked from the beginning by the role of geomorphology. The concentric plateau belts of the basin, with their escarpments facing eastwards, and defended by the Séré de Rivières system of fortifications constituted the impregnable "fortress of France" that the Germans had to bypass through Belgium.

Then, the WE valleys of the rivers Oise, Aisne and Marne, as well as the NW-SE Artois hills, determined the location of the first resistance and counter-attack points against the invasion from the north.

The geological character of the ground also settled the conditions, favourable or not, under which the soldiers dug trenches and tunnels, according to rock types, and the difficulties caused by water infiltration, as well as the trafficability of the soils.

The underground quarries of chalk and limestone regions offered shelters to the troops, and the mine warfare, which reached an unprecedented scale in this conflict, was influenced, as were the other engineering works, by the distribution, the thickness and the structure of rocks, their physical characteristics and the position of underground water tables.

The geologists were also involved in the supply of drinking water and of the mineral resources needed for the operations (graphite, zinc, aluminium, mineral fuels ...), in the assessment of the quality of concrete, and in the choice of strategic sites, with the first interpretations of aerial photographs.

Finally, environmental issues, of recent emergence, in particular about pollution and landscape and soil perturbation, have generated a revival of researches on the Great War.

### **Plan of the book**

The work will include:

1. A brief historical overview of the military operations within the general framework of the main geological structures of the Paris Basin.
2. An introductory chapter describing the features of each main geological formation.
3. Chapters describing the geological context of the great battles : Marne and Grand Couronné de Nancy, Flanders, Artois, Somme, the Noyon and Soissons region, Champagne, Argonne, Verdun, and Saint-Mihiel, the Vosges. These chapters will be supplemented by inserts focusing on some emblematic features (observatories, mine craters, quarries, and places of the major battles and breakthroughs...).
4. Thematic chapters on the attitude and role of French geologists during the war, mine warfare, the military use of underground quarries, mountain warfare, hydrogeology, the beginnings of geophysics, aerial photography, ground trafficability and location of airfields, the supply of mineral materials, and the new technologies linked to earth sciences and developed during the war.
5. A geological map of the front on a digital elevation model on which the most remarkable sites will be indicated.

The book is due end 2017.

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