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KONINKLIJK BELGISCH INSTITUUT
VOOR NATUURWETENSCHAPPEN

VERHANDELINGEN

VERHANDELING N° 125



THREE ABIETACEOUS CONES

FROM

THE WEALDEN OF BELGIUM

BY

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(WITH 5 PLATES)



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INTRODUCTION

The material described comes from the Wealden clays of the Hainaut district of Belgium. It represents part of an excellent collection of fossil plants (pteridophytes and gymnosperms) which were being described by the late Professor C. BOMMER in the early part of the present century, and to which SEWARD makes brief reference in « La flore wealdienne de Bernissart » (1900). The work was unfortunately never completed, and no account except a short note on *Weichselia* was published. However, a large number of plates were prepared and printed. The figures reproduced here on plates I and II are taken from BOMMER's photographs, and figures 1, 2 and 3 on plate III are from his drawings.

The fossils are preserved in clay as a kind of lignite. They are only moderately compressed, and lend themselves to detailed anatomical study. The technique employed in obtaining sections involved softening in alcoholic potassium hydroxide, embedding in celloidin and cutting on a sledge microtome. Usually the material presented no difficulty, but in the case of *Pityostrobus bommeri*, which was of a hard coaly nature, it was found necessary to control the rate of softening with the utmost care in order to conserve the internal structure and at the same time to obtain good infiltration.

The actual degree of compression varies considerably; many specimens being scarcely at all distorted, whilst others are flattened to perhaps a quarter of their original thickness. Some of the cones of *Pityostrobus corneti* have been particularly severely compressed (e.g. Pl. V, fig. 4), and there is evidence (set forth below in the section on this species) suggesting that a certain amount of lateral spreading may have occurred in the plane of compression. As far as I know this kind of distortion in plant fossils has not hitherto been reported.

The tissues themselves, although usually showing signs of having been subjected to pressure, are for the most part remarkably well preserved. Only the softest parts such as the phloem and very thin walled parenchyma have collapsed, whilst the more resistant cells have, with few exceptions, retained their original form, even at times to show details of pitting.

Of these three species of Abietaceous cones, two are pine-like in their general external and internal organisation, and the third is superficially like a *Cedrus* or *Abies* cone, but presents a combination of anatomical characters not found

in either of these genera. As all the cones are isolated and there is at present no evidence on which they can be related to the associated vegetative material of leaves, twigs and secondary wood, it appears best to place them in a form-genus for cones. NATHORST'S (1897) genus *Pityostrobus* is appropriate. This has no precise definition but is used for any cone showing general Abietaceous characters. It is to be hoped that a more precise classification will be possible eventually.

All the material described here forms part of the collection of the Institut royal des Sciences naturelles de Belgique in Brussels. The microscopic preparations are also in this institute.

I should like to express my sincere appreciation of the valuable assistance and advice rendered to me by Professor T. M. HARRIS, under whose guidance this work has been carried out.
