

V General Remarks.

It may be well to mention here the various characters of ~~pyroschists~~ pyroschists or bituminous shales of different ages, as they have come under my notice.

1. The bituminous shale of Collingwood ~~Canada~~ contains what has been used for the distillation of coal oil, shows under the microscope very flocculent matter and slender spores, and its bitumen seems to have been derived from the disintegration of algae and Zophytes.

A specimen of inflammable shale from the Linton of Newmarket, prepared by Mr Thomas, shows similar shreds of organic matter without any macrospores.

Bituminous shales associated with a small layer of coal in the Middle Lian of Surpe, shows great quantities of shreds of epidermal tissue and fragments of ^{the} chitinous crusts of Eurypterids, but no distinct macrospores.

The rich bituminous shales of the lower Carboniferous of Chester county, New Brunswick, which have furnished

the material of the Alchistate or
hardened bitumen of that district
have not afforded any macerates
in the specimens I have been able
to examine, but are filled with
shreds apparently of vegetable matter
in a much disintegrated state.

As I have already stated the
Bedford Shales of Ohio contain in addition
to fragments of epidermal & woody & vascular
tissue many forms of Macerates quite
distinct from those of the underlying
Green Shales. A similar remark may
be made as to many varieties of
Cannel coal, Cannel coal and
bituminous shale of the coal-bearing
in which many forms of Macerates
and spongia may be found mixed
with shreds of the tissue and especially
of the epidermal tissue of various
kinds of plants.

From these facts it would
appear that the presence of Ohio's
Cannel Macerates is not a
necessary condition of the formation of
bituminous shales earth, bituminous or coals.
On the other hand certain shales and
especially those of the upper Green sand
the bituminous, bit-heavy grades ~~found~~
of this class.

On the other hand, it seems certain that the Macrospores are the cause of the highly bituminous character of the shales which are changed with them. ~~On the other hand~~ there are ^{many} highly bituminous shales such as for instance some beds of the Utica shale and the Lower Carboniferous shales of Albert County New Brunswick which depend for their inflammable matter on microscopic debris of an entirely different character. The point of fact* any kind of epidermal or dense cuticular tissue has chemical properties not very dissimilar from those of the tests of Microspores; In regard to Strophomena shales, while it is possible that algae may have furnished the material of bituminous matter I confess I am now inclined to attach importance in this respect to the Corneous matter of papillites and other Forphytes which is nearer in composition to corky & epidermal matter.

and such tissues
 have, as I have
 elsewhere shown,
 been mainly
 instrumental in
 the production
 of coal, in some
 cases of albed
 humus Macro-
 spores and spores
 occur in large
 plants.

In a botanical point of view the facts stated in this paper show that in the Cretaceous and probably also in the Carboniferous age the type of plants now represented by the Characeae was very largely developed and

* See my paper on Spore-cases in Coal, Ann. N.Y. Sci. Soc. 1846.

That the masses of these
plants were produced in
great abundance as to change
from the types of shale
over very large areas with
their remains there being,
about only to the extent of
underneath character of the
inter text have resulted
decomposition and remain
unenumerated in the map giving
but the same high content
character which would result
from the nature of a the
amount of *Speridium* spores
with similar sediment,

~~To sum up~~

- ~~1. Best specimens of manuscripts~~
- ~~2. Specimens like letters etc. etc.~~
- ~~3. Only that in Paris. Paris, etc. etc.~~
- ~~4. Other of Paris, etc. etc.~~
- ~~5. See of the quality of Paris, etc.~~
- ~~6. See of the quality of Paris, etc.~~