NOTE.

The Occurrence of Vanadium, Chromium, and Titanium in Peats.[1]—Attention has been called by Dr. W. F. Hillebrand[2] to the comparatively wide-spread occurrence of vanadium in a large number of minerals and rocks. He states that "Hayes in 1875 reported its occurrence in a great variety of rocks and ores. Quoting from Thorpe's 'Dictionary of Chemistry,' 'it is said to be diffused with titanium through all primitive granite rocks (Dieulafait) and has been found by Deville in bauxite, rutile, and many other minerals, and by Bechi and others in the ashes of plants and in argillaceous limestones, schists, and sands.....' It is further reported to comprise as V_2O_5 0.02–0.07 per cent. of many French clays, 0.02–0.03 per cent. of some basalts, 0.24 per cent. of a coal of unknown origin, and 0.45 per cent. of one from Peru, amounting to 38.5 per cent. and 38.0 per cent. of the ash, and noted respectively by Mourlot and Torrico y Meca."

Roussel[3] states that a basalt with a content of 0.707–2.378 per cent. of titanium contained 0.006–0.023 per cent. of vanadium. Gladstone,[4] however, states that it does not occur in the volcanic dust of Vesuvius. Terrèil[5] found it in iron ores. Stolba[6] also mentions its occurrence.

From the above the presence of vanadium could with reason be suspected in peat. In the hands of the writer were samples of peats from Hyde Swamps, one mile south of Pungo Lake near the Northern Junction of Beaufort and Hyde Counties, N. C. The approximate analysis of these peats gave :

Sample	Water.	Volatile matter.	Fixed carbon.	Ash.
Peat I.....	73.67	16.16	9.72	0.45
Peat II.....	71.58	17.42	10.31	0.69
Peat III.....	76.01	14.19	9.32	0.48

The water was determined by taking a cube measuring about eight cm. each way (from 700 to 800 grams) and bringing to a constant weight by heating for a number of hours not higher

[1] Read before the North Carolina Section at the midwinter meeting.
[2] *Am. J. Sci.*, 6, 209 (*1898*).
[3] *Ber. d. chem. Ges.*, 6, 1417 *b*.
[4] *Ibid.*, 5, 815 *b*.
[5] *Ibid.*, 10, 731 *a*.
[6] *Chem. Centrbl.* (*1897*), 121.

than 105° C. An analysis, approximate, of this dried peat gave the following results :

Sample.	Volatile matter.	Fixed carbon.	Ash.
Peat I	61.38	36.90	1.72
Peat II	61.35	36.20	2.45
Peat III	59.13	38.85	2.02

It was convenient to examine the ash of a large number of peats from this and other localities to ascertain the presence of titanium. We have found no statements regarding the presence of this element in these ashes, although such a surmise was logical. Neither does chemical literature, as far as we have been able to examine, give any mention of the occurrence of chromium in peats. Appended are the results of seeking for these elements in the samples mentioned above.

Sample.	Titanic oxide.	Chromium sesquioxide.	Vanadium pentoxide.
			Percentages in ash.
Peat I	0.490	0.0283	0.00107
Peat II	0.340	0.0343	0.0026
Peat III	0.491	0.0355	0.0031

In determining titanium the ash was decomposed according to the method of W. A. Noyes,[1] namely, by fusion with sodium fluoride and potassium pyrosulphate. The melt was brought into solution with Dunnington's[2] necessary precaution in mind ; *viz.*, having from five to ten per cent. of sulphuric acid present. Hydrogen dioxide was added according to Weller's[3] well-known method and the titanium determined colorimetrically. All hydrofluoric acid was driven off in the fusion and the hydrogen dioxide was free from that acid as well. Hillebrand[4] has shown the necessity for this.

Chromium[5] and vanadium[6] were estimated according to the latest method of Hillebrand.

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[1] *J. Anal. Appl. Chem.*, 5, 39.
[2] This Journal, 13, 210.
[3] *Ber. d. chem. Ges.*, 15, 2592.
[4] This Journal, 17, 718; *Chem. News.*, 72, 158.
[5] This Journal, 20, 454.
[6] *Ibid.*, 20, 461; *Am. J. Sci.*, 6, 209.