
PEAT DEPOSITS IN IOWA

BY

S. W. BEYER

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PEAT AND PEAT DEPOSITS IN IOWA

Introduction. During the summer of 1905 the Iowa Geological Survey detailed Mr. L. H. Wood to locate and determine the area and thickness of the leading peat swamps in Iowa. On the basis of Mr. Wood's notes, Mr. T. E. Savage, then Assistant State Geologist, prepared "A Preliminary Report on the Peat Resources of Iowa" which appeared early in 1906 as Bulletin 2 of the Survey. Several of the county reports published before the appearance of the bulletin casually mentioned the peat deposits within their borders, and all of those published since having to do with counties within the peat area mention and some describe their peat resources.

Several attempts have been made to utilize Iowa peat, notably near Dows in Franklin county and at Goose Lake near Fertile in Worth county. Both plants have not yet passed the experimental stage. Interest in the possibilities of the state's resources in peat has been stimulated greatly by the preliminary work of the Survey, and hence the reason for the present more extended inquiry.

During portions of the summers of 1907 and 1908 Mr. W. F. Coover, assisted by Mr. F. A. Knowles during 1908, mapped and sampled the more important bogs in the state. The work of sampling was made difficult because of the protracted wet weather during the field seasons. Bogs containing less than forty acres were not sampled, as a rule, and no samples were saved in those where the vegetable debris averaged less than three feet in thickness. A two-inch common auger was used both for testing depth and securing samples. In general, all of the borings of a hole were mixed and constituted but a single sample. Where considerable changes in character and quality of material were noted an additional sample was sometimes taken. The samples were numbered and shipped to headquarters for further study and analysis.

Peat Defined. Ordinary vegetable matter according to standard authorities is composed of two compounds, cellulose ($C_6H_{10}O_5$) or vegetable fiber, and lignin ($C_{35}H_{24}O_{20}$) or ordinary wood fiber. Nitrogen in small quantities is generally associated with the two preceding.

Both cellulose and lignin are unstable under atmospheric conditions and tend to break down to much more simple compounds, chief of which are members of the marsh gas series, carbonic acid gas and water. In air the destruction of vegetable matter is almost complete, leaving behind only the inorganic residue, similar in character to the ash residue which remains after burning wood. In fact, slow oxidation in air under natural conditions produces results practically parallel to those produced by rapid oxidation through burning. In the case of plant remains which accumulate under water, the process of simplification is interfered with and only a partial chemical breaking down is the result. The principal changes which take place are a relative loss in oxygen and hydrogen and an increase in carbon. The resultant partially decayed plant debris is known as peat. From the above it is evident that the physical constitution and chemical composition must be highly variable. Physically peat varies from a highly fibrous, heterogeneous lace work of almost unchanged plant remains to a fiberless, homogeneous, structureless muck or mud. In the first the original plants are easily identified, while in the latter the organic origin can be determined only through the assistance of the compound microscope.

In composition the variation is important but less easily marked. The carbon percentage ranges from about forty to over sixty. In color Iowa peat ranges from a light brown through various shades of brown to almost jet black in the non-fibrous varieties. The latter often show shades of gray and blue due to the presence of clay and remains of fresh water shells.

Properties of Peat. Peat when freshly removed from the bog holds from seventy-five to eighty-five or even ninety per cent of water. Even air dried peat retains from ten to twenty-five per cent of water, the amount varying with climatic conditions and the purity and physical constitution of the peat. In general, the freer from impurities and more fibrous the peat, the more water

retained. It was early observed that animal organisms imbedded in peat were preserved indefinitely. It is due to this antiseptic property that peat itself is preserved from decay.

Occurrence. Most of the peat deposits in Iowa occur in shallow depressions, but occasional peat deposits may be found on gently sloping hillsides, marking a line of seeping springs. The latter are usually of too small extent to be commercially considered. The first type only receives attention in this paper. Various terms have been and are being applied to peat deposits in Iowa. Perhaps the most common are bog, marsh and swamp. The late Professor N. S. Shaler used the term morass in his published writings for similar deposits. Professor C. A. Davis in his report on the Michigan* Peat Deposits uses the above terms for certain specific types of undrained areas. He defines a bog "as an area of wet, porous land on which the soil is made up principally of decayed and decaying vegetable matter, so loosely consolidated, and containing so much water, that the surface shakes and trembles as one walks over it. The vegetation upon the surface is variable, but it is characteristically either some species of moss or of sedge, or grass, or a combination of two or more of these with shrubs and even small trees." A marsh he states "has a firm soil that is not easily shaken when walked upon, although it may be soft and very wet, even submerged, and the vegetation upon it is principally grass-like, that is, with long narrow leaves, and weak, short-lived aerial stems. Shrubs may occur upon marshes, and where they are present not infrequently form thickets." A swamp as described by Davis "has trees and shrubby plants as the most important part of the vegetation, the soil being, as in the case of the marsh, firm, but wet, even, at times, to flooding." It is apparent even to casual observers that there can be no sharp line of separation according to Davis' definitions between the bog, the marsh, and the swamp.

In many cases two or even all of the above types may be represented in the same basin. Practically all of the Iowa peat accumulations worthy of mention belong to the bog type. Swamps as defined by Professor Davis are unknown in Iowa, at least in the peat producing district. All of the peat bogs of

*Annual Report, Geological Survey of Michigan, 1906, pp. 108, *et seq.*

commercial importance are confined to the Wisconsin drift sheet, and by far the most important bogs are within the Altamont morainal belt on the east side of the Wisconsin lobe. The bogs vary greatly in area and depth. They range in area up to 1,500 acres and in depth to more than thirty-five feet. The deepest bogs tested are in those morainal tracts where the surface is most broken. Away from the morainal belt the basins become shallower and the peat thinner and as a general rule poorer in quality.

Mode of Accumulation. In many of the shallower basins water plants grow directly from the bottom and peat is accumulated through the successive generations of plants. Most of the bogs in the interior of the Wisconsin drift lobe are of this type. In the deeper bogs the filling is done by the growth of plants from the edges and to some extent from plants which grow on top of the water. The plant border extends itself as a mat over the surface of the water and eventually covers the entire surface of the lake or pond with a floating vegetable mat. Bear Lake in Winnebago county is an example of a lake being slowly transformed into a bog by the extension of the border mat. Sample holes put down at some distance from the open water disclosed a heavy fibrous layer underlain by a very soft peaty mud. The usual sequence in the deeper bogs is a brown, highly fibrous layer or surface mat resting on a non-fibrous to slightly fibrous brownish black mud or muck. In many instances this sequence is repeated, and below the peat mud is a second brown fibrous horizon followed by a second layer of peaty mud. Marly to clayey layers are not infrequently interspersed with the purer peat.

Peat Plants. Professor L. H. Pammel has prepared a list of the leading plants which contribute to the production of Iowa peat deposits. Suffice it to say that while in high latitudes and high altitudes the club mosses, Sphagnums and Hypniums contribute very largely toward the accumulation of peat, grasses and sedges are much more important in Iowa peat bogs. Mosses are present occasionally, but play a secondary role. Michigan and Wisconsin bogs support heavy growths of timber in many cases, but Iowa bogs are remarkably free from the growth of trees and shrubs.

Rate of Growth. The rate of accumulation is variable, but must be extremely slow, especially where the smaller plants predominate and there is but little increase through wash. In Iowa, as the chief deposits are in the Wisconsin drift, the filling has probably been going on since the retreat of that ice sheet. The deepest bogs probably exceed thirty-five feet but little. Assuming the minimum time estimate since the disappearance of the Wisconsin ice and the maximum thickness of bog, the maximum rate of accumulation would be about one foot of peat in about two hundred years. The average rate is undoubtedly much less.

Composition of Iowa Peat. Both chemical and calorimetric analyses were made of the peat samples collected. Chemically, Iowa peat runs high in ash and comparatively low in the combustible elements. The leading impurities are quartz sand, and clay, and lime carbonate derived from the remains of small fresh water molluscs.

The Goose Lake peat bog near Fertile in Worth county may be considered fairly representative of the best grade of Iowa peat bogs. An average sample of the air-dried machine peat put upon the market by the Fertile Peat and Clay Company gave the following composition:

Moisture	9.59 per cent
Volatile carbons	27.50 per cent
Fixed carbon	39.17 per cent
Ash	23.74 per cent
<hr/>	
Total	100.00 per cent

An analysis of ash from the above sample gave the following results:

Silica	10.98 per cent
Ferric oxide and alumina.....	8.42 per cent
Lime	2.87 per cent
Magnesia	0.60 per cent
<hr/>	
	22.87 per cent
Total ash	23.74 per cent

In this particular case the leading impurity is clay with some lime. On account of the prevailingly high percentages of ash, the heat values run correspondingly low.

The high percentage of ash in Iowa peat as compared with Michigan, Ontario and Maine peat, as well as the increase in ash toward the southwest in the Iowa field, is believed to be due largely to wind blown silt and clay. The prairie character of the Iowa bogs would interfere less with wind work than the timbered areas to the north and east.

The Heat Value of Iowa Peat. Davis in his work on Michigan peat shows that, in general, the heat value of peat varies inversely as the amount of ash present, but that there are many exceptions to the rule. The same rule applies to Iowa peat. A casual inspection of the analyses appended herewith is convincing and the dependence of heat value to ash is obvious. The range is from about 8,400 British Thermal Units down to peats so low in combustible matter that the charge fails to explode in the calorimeter. The average Iowa peat has about one-half the heat value of the average Iowa coal.

METHODS OF PREPARING PEAT FOR THE MARKET

Cut Peat. In Western Europe peat has long been used as a fuel by the common people. The method earliest employed and still used extensively was to cut the peat into rectangular blocks which were ricked up on or near the bog and permitted to air dry. This method involves no treatment whatever, and the product is known as cut peat. Only the fibrous varieties can be used in this way. On account of the bulkiness of the product and loss in handling, the use of cut peat is limited to the immediate vicinity of the bog. The cut peat retains from twenty to forty per cent of moisture.

Machine Peat. The essential features in the production of machine peat are that the peat is treated either in the bog or after its removal from the bog, with or without the addition of water, and then moulded by hand or by machinery. The simplest possible method is where the peat after being cut loose is worked into a pulp by the tramping of men or animals. Then it is moulded into blocks of convenient size and shape and dried in air. Machine peat generally means the use of machinery, and in those plants considered up-to-date, the removal from the pit, the reduction to a peat pulp, and the final moulding into blocks are

all done by machinery. A considerable number of excavators, conveyors, tempering and moulding machines have been invented and are in use in western and northern Europe. Some of these have been imported, modified, and are in use on the North American continent. The leading foreign types take the names of their inventors, and are the Schlickeysen,* R. Dolberg, A. Heinen, L. Lucht, A. Anrep, Svedala, and Akerman. In all of the above the peat is reduced to a pulp by passing through a machine resembling either the disintegrator or the pug mill, or both, used in preparing clay in ordinary brick plants. The peat plant near Fertile in Worth county has installed a Heinen machine.

In all of the above machines the peat pulp issues as a continuous bar, is received on pallets, is cut into convenient lengths and removed to the drying field or drier. As a rule artificial heat is not used in the drying of machine peat. The air dried machine peat retains from fifteen to thirty per cent of moisture.

Briquetted Peat. In both cut peat and machine peat the low density and consequent bulkiness and low fuel value of the product, its high moisture content and friable character not only render transportation and repeated handling unprofitable, but practically prohibit them. To overcome these difficulties, a number of briquetting machines have been devised and put into use. The fundamental processes in briquetting consist of first removing a portion of the water from the peat, after which it is passed through a disintegrator, screened, thoroughly dried in a rotary or plate drier, and then put through the briquette machine. A plunger working in a die subjects each briquette momentarily to a pressure of from 15,000 to 30,000 pounds per square inch. The resultant product possesses nearly the density of bituminous coal and is but slowly affected by the weathering agencies.

Attempts have been made to briquette peat direct from the pit, but without success. No mechanical device has yet been found by which the water can be removed directly.

*Peat and Lignite, their Manufacture in Europe; by E. Nystrom, Canada Department of Mines, Mines Branch, pp. 58-84; Ottawa, 1908.

USES OF PEAT

As a Fuel. The principal use of peat has been and is as a fuel. It may be used direct as cut peat, machine peat, or briquettes, or may be transformed into coke, half coke, producer gas, or powder before burning. The latter two methods deserve most consideration at present for Iowa peat. Producer gas has been used much more extensively in western Europe than in the United States, and especially is this true of producer gas generated from peat. The gas obtained from peat compares very favorably in quality and heat value with that obtained from coal. Nyström* reports that peat used as a powder and containing seventeen per cent of water gave nearly the same energy as the same weight of Newcastle coal. Peat as a source of producer gas must be of interest to north central Iowa where other fuel is scarce.

In the production of producer gas from peat, tar and ammonium sulphate may be recovered as by-products.

Minor Uses of Peat. On account of its high absorbent power it is used as stable litter, as a deodorizer and disinfectant, as an antiseptic and absorbent in surgery. It is also used as a fertilizer for lands deficient in humus. Fibrous peat is used as a packing material, for paving and building block, and artificial lumber, and for the manufacture of paper, and even woven into cloth.

USES OF IOWA PEAT

As a Fuel. From a casual inspection of the table of chemical analyses it is obvious that a great majority of the samples of Iowa peat analyzed carry upwards to twenty-five per cent of ash. According to Davis in his report on Michigan peat bogs, peat carrying more than twenty or twenty-five per cent of ash is too low grade to be considered commercially. Samples carrying up to thirty or thirty-five per cent burn readily and may be considered a serviceable fuel where other fuels are scarce. Such low grade fuel could not be shipped far from the bog in competition with Iowa and Illinois coals. It is possible that ways and means may be found to transform the peat into power through the producer gas engine and transmit it electrically to points where needed, or into a gas and pipe it from the bog to the consumer.

*Peat & Lignite, Etc.; Canada Dept. Mines, pp. 171 and 172, and 198 *et seq.*; Ottawa, 1908.

Davis reports that a ton of peat carrying twenty to twenty-five per cent of moisture treated by the Ziegler process yields 6,650 cubic feet of gas, while the best English cannel coals yield scarcely twice as much gas. The cost per thousand feet is decidedly in favor of the peat. The peat coke is far superior to the gas coke on account of its freedom from sulphur and other objectionable impurities.

The ordinary gas producers now on the market in the United States are not adapted for the use of peat. Several of the large manufacturers of producers are at work on the problem and a producer which will successfully use peat is confidently expected in the near future.

The peat machined at Fertile and Dows kindles readily, burns without clinkers, and gives fair satisfaction for domestic purposes.

For Other Purposes. A sample of peat from the Fertile plant was sent to the Pilgrim Paper Company, Capac, Michigan, for examination, but was pronounced unsuited for the manufacture of paper pulp. The brown, highly fibrous layer found in the majority of Iowa bogs ought to furnish material sufficiently fibrous for a paper pulp. This superficial layer varies from two or three feet up to eight or ten feet in thickness. On account of its high absorptive capacity, it ought to find a ready sale for litter and packing material as straw and excelsior become scarcer.

TABLE I

Shows location by county, township, and section; acreage, average depth, and character of drainage of the more important Iowa peat bogs. The last column contains sample numbers representing each bog and corresponding to sample numbers in two tables following.

County	Township	Section	Acreage	Average depth in feet	Character of Drainage	Sample Nos.
Cerro Gordo	Clear Lake	26		6		628
Cerro Gordo	Clear Lake	35	225	6	Fair	594, 599-602
	Union	2				614-617
Cerro Gordo	Grant	34 & 35	70	6	Fair	590, 595
Cerro Gordo	Grant	25	35	7	Fair	605-607
Cerro Gordo	Grant	13	40	5	Fair	608-609
Cerro Gordo	Grant	22 & 27	60	5	Fair	610-611
Cerro Gordo	Grant	31		6	Poor to Fair	613
Cerro Gordo	Grimes	19 & 20	40	15	Good	405-407
Cerro Gordo	Grimes	23	50	8	Good	409, 410
Cerro Gordo	Lake	19	125	8	Fair	584-586, 597
Cerro Gordo	Lake	29 & 30	125	6	Fair	583, 587, 598, 601
Cerro Gordo	Mt. Vernon	5 & 8	80	5	Poor	592, 593, 596
Cerro Gordo	Union	11, 12, 13, 14	375	6	Fair	614-617
Cerro Gordo	Union	24	210	6	Good	618-620
Cerro Gordo	Union	31 & 35	175	15	Good	401-404
	Grimes	2 & 3				478, 479, 408
Cerro Gordo	Union	20		5		627
Clay	Freeman	23		4		640P, 641P
Clay	Freeman	11		4		642P
Dickinson	Richland	17	50	3		638
Emmet	Iowa Lake	34	400	4	Fair	629-632
Franklin	Lee	18	40	10	Poor	356-360
Franklin	Lee	6				
	Morgan	36	125	8	Fair	361-365
	Oakland	1				
Franklin	Morgan	11	25	5	Good	366
Franklin	Morgan	27 & 28	120	9	Good	350-354
Franklin	Oakland	2 & 3	70	5	Poor	355
Franklin	Oakland	11 & 12	20	8	Good	369, 370, 381
		13 & 14	60	8	Good	
Franklin	Scott	33	100	7	Fair	375-377
Franklin	Scott	29	30	4	Fair	378
Hamilton	*					
Hancock	Crystal	23, 24, 25, 26, 35, 36	1,500	3-4	Poor to Fair	617, 636-638
	Britt	1 & 2				
Hancock	Concord	5		6		574
Hancock	Crystal	2	70	8	Poor	550, 551
Hancock	Crystal	14	50	6	Poor	555
Hancock	Garfield	22 & 23	120	9	Good	578-579
Hancock	Garfield	18 & 19	600	7	Fair	580-581
Hancock	Garfield	10		5		572
Hancock	German	33	40	12	Good	414-415
Hancock	German	4, 5 & 9	600	8	Fair	416-423
	Garfield	32 & 33				
Hancock	German	5	40	5	Fair	474-476
Hancock	Madison	16, 17, 20, 21	350	3	Poor	639-690
Hancock	Madison	19	140	3	Poor	648
Hancock	Twin Lake	29 & 32	70	15	Fair	398-400
Hancock	Twin Lake	23		4		
Hancock	Twin Lake	11	60	10	Fair	411-413
Hancock	Twin Lake	4	100	8	Poor	
Kossuth	Greenwood	11	75	5	Poor	624-626
Kossuth	Ramsay	26	300	4	Poor	621, 623, 622
Kossuth	Sherman	10, 13, 14, 23, 26, 25	250	4	Fair	634P-639P

*Several areas of thin peat, Iowa Lake perhaps the most important.

TABLE I—CONTINUED

County	Township	Section	Acreage	Average depth in feet	Character of Drainage	Sample Nos.
Kossuth	Swea	4	---	4	---	033
Palo Alto	Lost Island	11	---	3	---	643P-645P
Webster	Burnside	31	---	---	---	---
	Clay	36	---	---	---	---
	Lost Grove	1	600	3	Good	649, 691, 692, 650
	Dayton	6	---	---	---	---
Webster	Lost Grove	13 & 24	200	3	Fair to Poor	693-694
Winnebago	Center	3 & 4	90	8	Poor	491, 500, 494
	Norway	33	---	---	---	---
Winnebago	Center	29	70	7	Fair	498, 502
Winnebago	Center	10, 11, 13, 14 & 15	700	10	Poor to Fair	501, 499, 504, 511, 514, 517, 538, 539
Winnebago	Center	24, 25, 26, 27, 34, 35, 36	1,500	12	Poor to Fair	520, 525, 530, 512, 523, 524, 515, 518, 516, 540, 541
	Mt. Valley	1, 2, 3, 11	---	---	---	---
Winnebago	King	15 & 22	80	6	Poor	556
Winnebago	Linden	14, 15, 22, 23	160	5	Fair	544-546
Winnebago	Linden	29 & 32	80	6	Fair	542
Winnebago	Logan	24	50	10	Poor to Fair	534, 547
Winnebago	Logan	14, 15, 22, 23	200	5	Poor to Fair	535-537
Winnebago	Mt. Valley	28, 29, 32, 33	100	10	Poor to Fair	549, 551, 554
Winnebago	Mt. Valley	5 & 6	90	6	Poor to Fair	557, 558
Winnebago	Mt. Valley	15 & 22	50	6	Poor	559, 560
Winnebago	Mt. Valley	8, 9, 16, 17	900	8	Poor	561-571, 573
		19, 18, 20, 21	---	---	---	---
Winnebago	Norway	34 & 35	350	8	---	487, 488, 505
	Center	3	---	---	---	---
Winnebago	Norway	14, 15, 22, 23	225	10	Fair	497, 507, 508
Winnebago	Norway	7, 17, 18	40	6	Fair	509
Winnebago	Norway	17 & 18	70	6	Fair	503
Worth	Bristol	6	120	8	Poor	489, 490
Worth	Bristol	17, 18, 20, 29	200	6	Poor to Fair	513, 515, 532
Worth	Bristol	27 & 28	90	7	Fair	519, 522, 531
Worth	Fertile	19	120	10	Fair	424-426
Worth	Fertile	21, 22, 26, 27 & 28	600	12	Good	---
Worth	Hartland	29	40	6	Poor	533
Worth	Hartland	20	30	4	Poor	---
Worth	Silver Lake	7 & 8	100	5	Fair	---
Worth	Silver Lake	10 & 11	40	10	Poor	492, 495
Worth	Silver Lake	13 & 14	40	12	Poor	350, 351
Worth	Silver Lake	22	60	7	Poor	493, 496
Wright	Belmond	35 & 36	80	4	Good	379, 383, 384
Wright	Belmond	16 & 17	75	8	Fair	469, 470
Wright	Belmond	7 & 8	75	8	Good	471-473
Wright	Blaine	27, 34, 35	600	3-4	Good	368
Wright	Grant	6 & 31	100	12	Good	393-397
	Lake	1	---	---	---	---
Wright	Iowa	22 & 15	12	6	Poor	385
Wright	Iowa	14 & 23	35	12	Good	386, 388, 390, 477
Wright	Iowa	5, 8, 9, 16, 17	300	6	Fair	391, 389, 392
Wright	Wall Lake	12	---	5	---	367
Wright	Wall Lake	2	250	3-4	Good	372-374

TABLE II

Contains laboratory number, detailed location, and detailed description for each peat sample studied.

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
350	Franklin	Morgan Twp., Sec. 28. Near west end of bog	4 ft. brown, fibrous. 4 ft. brownish black, less fibrous. 8 ft. sand and peat.
351	Franklin	Morgan Twp., Sec. 28. Near pit of Iowa Peat Plant	3.5 ft. brown, fibrous. 4 ft. brown and black mingled.
352	Franklin	Morgan Twp., Sec. 28. 200 yds. Se. sample No. 351.	5.5 ft. brown, fibrous. 5 ft. brownish black, but slightly fibrous.
353	Franklin	Morgan Twp., Sec. 28. 200 yds. S. of east of sample No. 352	6.5 ft. brown, fibrous. 2 ft. brownish black, non- fibrous. 1.5 ft. brown, fibrous
354	Franklin	Morgan Twp., Sec. 27. 320 yds. S. of east of sample No. 353	8 ft. brown, fibrous. 2 ft. brownish black, non- fibrous. Blue clay below.
355	Franklin	Oakland Twp., Sec. 3. 300 yds. from Ne. corner	6.5 ft. brown, fibrous. A thin layer of non-fibrous below.
356	Franklin	Lee Twp., Sec. 18. On north line	2.5 ft. brown, fibrous. 3 ft. brownish black, non- fibrous.
357	Franklin	Lee Twp., Sec. 18. On $\frac{1}{2}$ Sec. line, 125 yds. from edge of bog	8 ft. brown, fibrous. 2 ft. brownish black, non- fibrous. 5 ft. brown, fibrous.
358	Franklin	Oakland Twp., Sec. 11. On Sec. line (Secs. 11 and 12)	8 ft. brown, fibrous. 9 ft. brownish black, non- fibrous. Thin clay seam at 14 ft.
359	Franklin	Oakland Twp., Sec. 11. Near south end of bog	7 ft. brown, fibrous. 7.5 ft. brownish black, non- fibrous. Gravel below.
360	Franklin	Oakland Twp., Sec. 12. East of sample No. 359	7 ft. brown, fibrous. 7.5 ft. brownish black, non- fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
361	Franklin	Oakland Twp., Sec. 1. 400 yds. E. $\frac{1}{2}$ Sec. line	7.5 ft. brown, fibrous. 3.5 ft. brownish black, non-fibrous.
362	Franklin	Oakland Twp., Sec. 1. South side of bog	7 ft. brown, fibrous. 4.5 ft. brownish black, non-fibrous.
363	Franklin	Oakland Twp., Sec. 1. Near east line section	7 ft. brown, fibrous. 8 ft. brownish black, non-fibrous. 5.5 ft. brown, fibrous.
364	Franklin	Morgan Twp., Sec. 36, Se. $\frac{1}{4}$. 125 yds. from east edge of bog	11 ft. brown, fibrous. 1 ft. brownish black, non-fibrous. Clay parting at 8 ft.
365	Franklin	Morgan Twp., Sec. 36. 125 yds. W. of sample No. 364	11 ft. brown, fibrous. 2.5 ft. brownish black.
366	Franklin	Morgan Twp., Sec. 11. On road 500 yds. south of corner	2.5 ft. brown, fibrous. 3.5 ft. brownish black.
367	Wright	Wall Lake Twp., Sec. 12. $\frac{3}{8}$ mi. S. north line, along ditch	3 ft. brown, fibrous. 3.5 ft. brownish black.
368	Wright	Blaine Twp., Sec. 27. Near Nw. corner Sw. quarter	2.5 ft. brown, fibrous. 4 ft. brownish black.
369	Franklin	Oakland Twp., Sec. 11. Southeast corner	7 ft. brown, fibrous. 3.5 ft. brownish black. 3.5 ft. brown, fibrous.
370	Franklin	Oakland Twp., Sec. 11. 300 yds. W. of north of sample No. 369	7 ft. brown, fibrous. 3 ft. brownish black.
371	Franklin	Oakland Twp., Sec. 11. 125 yds. west of sample No. 370	8 ft. brownish black. 5.5 ft. lighter colored peat.
372	Wright	Blaine Twp., Sec. 35. 225 yds. south of middle N. line	2.5 ft. brown, fibrous. 3.5 ft. brownish black.
373	Wright	Blaine Twp., Sec. 35. Near center Nw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	2 ft. brown, fibrous. 3 ft. brownish black.
374	Wright	Blaine Twp., Sec. 35. 140 yds. Sw. sample No. 373, along fence	2 ft. brown, fibrous. 1.5 ft. brownish black.

PEAT DEPOSITS IN IOWA

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
375	Franklin	Scott Twp., Sec. 33. North section line road	2 ft. brown, fibrous. 5.5 ft. brownish black.
376	Franklin	Scott Twp., Sec. 33. 100 yds. from middle east edge of bog	3 ft. brown, fibrous. 3 ft. brownish black. 1 ft. bluish peaty mud.
377	Franklin	Scott Twp., Sec. 33. Near middle south side of bog	2 ft. brown, fibrous. 3 ft. brownish black. 1 ft. marly layer. 2 ft. brown, fibrous.
378	Franklin	Scott Twp., Sec. 29. Near Nw. corner at bridge	3.5 ft. brown, fibrous.
379	Wright	Belmond Twp., Sec. 35. 100 yds. north of road on south line	3 ft. brown, fibrous.
380	Wright	Belmond Twp., Sec. 35. 400 yds. north of road, east side bog	2 ft. brown, fibrous. 2 ft. peat and grit.
381	Wright	Belmond Twp., Sec. 35. 100 yds. directly west of sample No. 380	4 ft. brownish black peat.
382	Wright	Belmond Twp., Sec. 35. 150 yds. Ne. from sample No. 381	4.5 ft. brownish black.
383	Wright	Belmond Twp., Sec. 36. Ne. corner Ne. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	2 ft. brown, fibrous. 2.5 ft. brownish black.
383.5	Wright	Belmond Twp., Sec. 35. West of sample No. 379	2 ft. brown, fibrous. 3 ft. brownish black.
384	Wright	Belmond Twp., Sec. 35. On road south end of bog	2 ft. brown, fibrous. 2.5 ft. brownish black.
385	Wright	Iowa Twp. line, Secs. 15 and 22. About 200 yds. E. of Sw. corner	5 ft. brown, fibrous. 2 ft. brownish black. 1 ft. peaty clay. 2 ft. brownish black. 1 ft. brown, fibrous.
386	Wright	Iowa Twp., Sec. 23. Near Nw. corner Ne. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	5 ft. dark brown. 4.5 ft. marly peat, on gravel.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
387	Wright	Iowa Twp., Sec. 23. 150 yds. south of sample No. 386	5 ft. brownish black, almost non-fibrous. 1.5 ft. peaty marl. 13.5 ft. brown, fibrous.
388	Wright	Iowa Twp., Sec. 23. 175 yds. due east sample No. 387.	2.5 ft. brownish black. 9.5 ft. peaty marl.
389	Wright	Iowa Twp., between Secs. 9 and 16. At bridge	5.5 ft. brown, fibrous. 3 ft. peaty clay.
390	Wright	Iowa Twp., Sec. 23. Near middle north side of Nw. ¼.	2.5 ft. brownish black. 11 ft. peaty grit and clay to clayey peat.
391	Wright	Iowa Twp., between Secs. 8 and 17. Near west edge of bog	2 ft. brown, fibrous, to black peat mud.
392	Wright	Iowa Twp., between Secs. 9 and 16. 60 yds. east of sample No. 389	5.5 ft. brown, fibrous. 3 ft. peaty clay.
393	Wright	Lake Twp., on E. line Sec. 1. Lake at bridge near south edge of bog	3.5 ft. brown, fibrous. 9.5 ft. brownish black. Sand and gravel below.
394	Wright	Lake Twp., Sec. 1. About middle of bog	5.5 ft. brown, fibrous. 14 ft. brownish black. Grades downward into black peaty mud.
395	Wright	Lake Twp., Sec. 1. Near north edge of bog	4.5 ft. brown, fibrous. 13.5 ft. brownish black, very sticky below.
396	Wright	Lake Twp., Sec. 1. Along dredge ditch near north edge of bog	4.5 ft. brown, fibrous. 7 ft. brownish black. Gravel and sand below.
397	Wright	Lake Twp., Sec. 1. Along ditch 150 yds. south of sample No. 396	6 ft. brown, fibrous. 18 ft. brownish black. Bottom not reached.
398	Hancock	Twin Lakes Twp., Sec. 29. Near south edge, 300 yds. from E. end of bog	4 ft. brown, fibrous. 6.5 ft. brownish black. 2.5 ft. brown, fibrous. 3.5 ft. peaty marl and clay.
399	Hancock	Twin Lakes Twp., Sec. 29. Due north sample No. 398, near edge	2 ft. brown, fibrous. 22 ft. brownish black, variable. Bottom not reached.

TABLE II—CONTINUED

<i>Lab.No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
400	Hancock	Twin Lakes Twp., line Secs. 29 and 32. Near east edge of bog	5 ft. brown, fibrous. 2.5 ft. brownish black. 11.5 ft. reddish brown.
401	Cerro Gordo	Grimes Twp., Sec. 2. 150 yds. from west line of section	5 ft. brown, fibrous. 6 ft. brownish black. 2 ft. reddish brown.
402	Cerro Gordo	Grimes Twp., Sec. 2. 75 yds. N. of sample No. 401 and at center of bog	7 ft. brown, fibrous. 4 ft. brown, non-fibrous. 6 ft. lighter brown.
403	Cerro Gordo	Grimes Twp., Sec. 3. Near east edge bog on Nw. $\frac{1}{4}$	5 ft. brown, fibrous. 4 ft. brown, less fibrous. 7 ft. lighter brown.
404	Cerro Gordo	Grimes Twp., Sec. 3. Along drain at middle of bog. North of sample No. 403	5 ft. brown, fibrous. 5 ft. brown, non-fibrous. 12 ft. lighter brown.
478	Cerro Gordo	Grimes Twp., Sec. 3. North of sample No. 404 near north edge	3.5 ft. brown, fibrous. 8 ft. brownish black, becoming clayey below. 13 ft. light brown.
405	Cerro Gordo	Grimes Twp., line Secs. 19 and 20. Bridge near S. edge of bog	9 ft. brown, fibrous, becoming marly below. 8 ft. light brown.
406	Cerro Gordo	Grimes Twp., north of sample No. 405 near middle of bog	3 ft. brown, fibrous, grading into 7 ft. brownish black, marly below. 13 ft. light brown to grayish peat.
408	Cerro Gordo	Union Twp., Sec. 34. Sw. $\frac{1}{4}$, near Ne. corner	5.5 ft. brown, fibrous. 4 ft. brown, non-fibrous. 1.5 ft. reddish brown. 8 ft. grayish brown, clayey.
409	Cerro Gordo	Grimes Twp., Sec. 28. Se. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	3 ft. brown, fibrous. 1 ft. brownish black. Gravel and sand below.
410	Cerro Gordo	Grimes Twp., Sec. 28. Se. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	3 ft. brown, fibrous. 2 ft. brownish black.
	Cerro Gordo	Grimes Twp., Sec. 28. Due east of sample No. 410	5 ft. brown, fibrous. 5.5 ft. brownish black. 5.5 ft. reddish brown. 7.5 ft. grayish brown, marly.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
411	Hancock	Twin Lakes Twp., Sec. 11. Sw. $\frac{1}{4}$ south, middle of bog	4 ft. brown, coarsely fibrous Gravel below.
412	Hancock	Twin Lakes Twp., Sec. 11. Sw. $\frac{1}{4}$ near center of bog	5 ft. brown, coarsely fibrous. 8 ft. brownish black. 2 ft. grayish brown. 6 ft. reddish brown. Sand below.
413	Hancock	Twin Lakes Twp., Sec. 11. Sw. $\frac{1}{4}$. North of middle	5 ft. brown, coarsely fibrous. 5 ft. brownish black. .5 ft. grayish to reddish brown.
414	Hancock	German Twp., Sec. 33. E. $\frac{1}{2}$ of Sw. $\frac{1}{4}$. Near east edge of bog	2 ft. brown, coarsely fibrous. 7 ft. brownish black. Clayey peat below.
415	Hancock	German Twp., Sec. 33. E. $\frac{1}{2}$ of Sw. $\frac{1}{4}$. Near west edge	2.5 ft. brown, coarsely fibrous. 15.5 ft. brownish black to reddish gray below. Bored into a piece of wood at 18 ft. and could go no deeper.
416	Hancock	German Twp., on line between Secs. 4 and 9, and 100 yds. east of edge of bog	3.5 ft. brown, fibrous. 3.5 ft. brownish black.
417	Hancock	German Twp., Sec. 9. Along ditch 400 yds. S. sample No. 416	5.5 ft. brown, coarsely fibrous.
418	Hancock	German Twp., on line between Secs. 4 and 9 at middle of bog	7 ft. brown, fibrous. 9.5 ft. brownish black. 15.5 ft. red to grayish brown. Bottom not reached.
419	Hancock	German Twp., on line between Secs. 4 and 9. 120 yds. from W. edge	4.5 ft. brown, fibrous.
420	Hancock	German and Garfield Twp. line, Secs. 4 and 33 respectively. 100 yds. from island on east side	5 ft. brown, fibrous. 2 ft. brownish black.
421	Hancock	German and Garfield Twp. line. West of sample No. 420, near middle of bog	7 ft. brown, fibrous. 1.5 ft. brownish black.

PEAT DEPOSITS IN IOWA

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
511	Winnebago	Center Twp., Sec. 15. Sw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	9 ft. brown, fibrous. 4.5 ft. dark brown. Clayey peat at bottom.
514	Winnebago	Center Twp., Sec. 13. Northeast corner of Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 2 ft. dark brown.
517	Winnebago	Center Twp., Sec. 14. Center of Se. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	11 ft. brown, fibrous. 4 ft. dark brown. 4 ft. reddish brown.
512	Winnebago	Center Twp., Sec. 35. Near north line of Sec. west of dredge ditch	9 ft. brown, fibrous. 2 ft. fine, brown, fibrous. 4 ft. dark brown.
523	Winnebago	Center Twp., Sec. 34. 175 yds. east $\frac{1}{2}$ section line	5 ft. brown, fibrous. 6 ft. brown, slightly fibrous. 10 ft. light brown. 2 ft. reddish brown. 1 ft. light brown. Did not reach bottom.
524	Winnebago	Center Twp., Sec. 34. 200 yds. east of center	5 ft. brown, fibrous. 4 ft. brown, slightly fibrous. 14 ft. light brown.
515	Worth	Bristol Twp., Sec. 17. Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$ 225 yds. north of Sw. corner	8.5 ft. brown, fibrous.
518	Winnebago	Center Twp., Sec. 26. Nw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	11 ft. brown, fibrous. 4 ft. brown. 10 ft. reddish brown. Did not reach bottom.
516	Winnebago	Center Twp., Sec. 35. Se. $\frac{1}{4}$ of Se. $\frac{1}{4}$. Center of north line	7 ft. brown, fibrous. 10 ft. brown.
520	Winnebago	Center Twp., Sec. 35. S. side 125 yds. Nw. from bridge over dredge ditch	9 ft. brown, fibrous. 7 ft. brown.
526	Winnebago	Mt. Valley Twp., Sec. 2. Ne. $\frac{1}{4}$ of Nw. $\frac{1}{4}$. E. of dredge ditch, 250 yds. south of road	11 ft. brown, fibrous. 6 ft. brown. 10.5 ft. reddish brown.
521	Winnebago	Mt. Valley Twp., Sec. 2. Nw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$, 200 yds. from road	9 ft. brown, fibrous. 6 ft. brown. 4 ft. light gray.

DESCRIPTION AND LOCATION OF SAMPLES

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TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
527	Winnebago	Mt. Valley Twp., Sec. 2. Se. $\frac{1}{4}$ of Nw. $\frac{1}{4}$, 100 yds. W. of north and south $\frac{1}{2}$ section line	11 ft. brown, fibrous. 2 ft. black. 4 ft. brown.
528	Winnebago	Mt. Valley Twp., Sec. 2. Sw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$, 175 yds. E. of north and south $\frac{1}{2}$ section line	11 ft. brown, fibrous. 6 ft. brown. 6 ft. reddish brown. 3 ft. brown.
525	Winnebago	Center Twp., Sec. 25. Ne. $\frac{1}{4}$ of Ne. $\frac{1}{4}$, near W. line	9 ft. brown, fibrous. 4 ft. black.
529	Winnebago	Center Twp., Sec. 24. Sw. $\frac{1}{4}$ of Se. $\frac{1}{4}$ near center	11 ft. brown, fibrous. 6 ft. dark brown. 2 ft. reddish brown.
530	Winnebago	Center Twp., Sec. 24. Se. $\frac{1}{4}$ of Se. $\frac{1}{4}$, 100 yds. S. of Ne. corner	11 ft. brown, fibrous. 4 ft. brown. 11 ft. reddish brown.
513	Worth	Bristol Twp., Sec. 20. 300 yds. Nw. from road along dredge ditch	9 ft. brown, fibrous. 1 ft. brown.
519	Worth	Bristol Twp., Sec. 28. S. side Sec. 150 yds. from road, and 250 yds. from W. line	9 ft. dark brown (somewhat fibrous clayey peat un- derlying above).
522	Worth	Bristol Twp., Sec. 28. 200 yds. due N. of No. 519	5 ft. dark brown, somewhat fibrous. 4 ft. dark brown. 2 ft. reddish brown.
531	Worth	Bristol Twp., Sec. 27. 125 yds. Nw. of center of Sw. $\frac{1}{4}$	5 ft. dark brown, somewhat fibrous. 7 ft. dark brown.
532	Worth	Bristol Twp., Sec. 20. Sw. $\frac{1}{4}$, near middle	9 ft. brown, fibrous.
538	Winnebago	Center Twp., Sec. 14. Se. $\frac{1}{4}$ of Sw. $\frac{1}{4}$, near Nw. corner	9 ft. brown, fibrous. 6 ft. dark brown. 7 ft. reddish brown.
539	Winnebago	Center Twp., Sec. 14. Se. $\frac{1}{4}$ of Sw. $\frac{1}{4}$, near Nw. corner	6.5 ft. dark brown, slightly fibrous.
540	Winnebago	Center Twp., Sec. 24. Nw. $\frac{1}{4}$ of Se. $\frac{1}{4}$, 200 yds. Ne. from Sw. corner	9 ft. brown, fibrous. 2 ft. dark brown.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
541	Winnebago	Center Twp., Sec. 24. Center Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 7 ft. brown, slightly fibrous.
533	Worth	Hartland Twp., Sec. 29. Ne. $\frac{1}{4}$ of Nw. $\frac{1}{4}$, near Ne. corner	9 ft. brown, fibrous.
544	Winnebago	Linden Twp., Sec. 22. Near middle north line	5 ft. brown, fibrous. 2 ft. brown, slightly fibrous. 6 ft. black.
545	Winnebago	Linden Twp., Sec. 14. 100 yds. S. of center of Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	5 ft. brown, fibrous.
546	Winnebago	Linden Twp., Sec. 14. Se. corner of Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	4.5 ft. brown, fibrous, changing to black.
556	Winnebago	King Twp., Sec. 22. Center of Sw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	5 ft. brown, fibrous. 3 ft. dark brown. 4 ft. black.
542	Winnebago	Linden Twp., Sec. 29. Center of Nw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	5 ft. brown, fibrous. 2 ft. dark brown. 2 ft. black.
547	Winnebago	Logan Twp., Sec. 24. 150 yds. Ne. from Sw. corner of Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	9 ft. brown, fibrous. 15 ft. brown. Did not reach bottom of peat.
534	Winnebago	Logan Twp., Sec. 24. Center of Sw. $\frac{1}{4}$	7 ft. brown, fibrous. 2 ft. black. Gravel bottom.
535	Winnebago	Logan Twp., Sec. 23. 150 yds. Sw. of center	5 ft. brown, fibrous. 1 ft. black.
536	Winnebago	Logan Twp., Sec. 23. 200 yds. Nw. of center	6 ft. brown, fibrous. 1 ft. black.
537	Winnebago	Logan Twp., Sec. 23. Nw. $\frac{1}{4}$, 200 yds. from road	8.5 ft. dark brown, slightly fibrous. Gravel bottom.
550	Hancock	Crystal Twp., Sec. 2. Near Sec. line, 100 yds. from W. edge of bog	5 ft. brown, fibrous. 9 ft. brown. Peat mud continues.
548	Hancock	Crystal Twp., Sec. 2. On $\frac{1}{4}$ Sec. line east side of bog near section line	5 ft. brown, fibrous. 4 ft. brown, gradually becoming poorer.

DESCRIPTION AND LOCATION OF SAMPLES

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TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
549	Winnebago	Mt. Valley Twp., Sec. 33. Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	5.5 ft. brown, fibrous.
575	Winnebago	Mt. Valley Twp., Sec. 33. 300 yds. E. and 300 yds. S. of Nw. corner	24 ft. brown, fibrous peat, changing to slightly fi- brous.
551	Winnebago	Mt. Valley Twp., Sec. 33. 250 yds. N. and 50 yds. E. of No. 575	7 ft. dark brown, fibrous. 7 ft. brown, slightly fibrous.
552	Winnebago	Mt. Valley Twp., Sec. 32. Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$, 100 yds. west and 150 yds. S. of Ne. corner	11 ft. brown, fibrous, chang- ing to slightly fibrous.
553	Winnebago	Mt. Valley Twp., Sec. 29. Se. $\frac{1}{4}$ of Se. $\frac{1}{4}$, 150 yds. from road and midway between quarter and section lines	15 ft. brown, fibrous, chang- ing to slightly fibrous.
554	Winnebago	Mt. Valley Twp., Sec. 29. 125 yds. N. of sample No. 553	24 ft. brown, fibrous, chang- ing to slightly fibrous.
555	Hancock	Crystal Twp., Sec. 14. Ne. $\frac{1}{4}$, near north edge of bog	6 ft. brown, fibrous. 3 ft. black.
576	Hancock	Garfield Twp., Sec. 23. 200 yds. S. and 100 E. of Nw. corner	5 ft. brown, fibrous.
577	Hancock	Garfield Twp., Sec. 23. 300 yds. south of No. 576	9 ft. brown, fibrous. 3 ft. brown, somewhat fibrous. A peat mud continues 14 ft.
578	Hancock	Garfield Twp., Sec. 23. 300 yds. south of No. 577	9 ft. brown, fibrous. 3 ft. fine, brown, somewhat fibrous.
579	Hancock	Garfield Twp., Sec. 23. Near center of Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	5 ft. brown, fibrous. 1 ft. brown.
580	Hancock	Garfield Twp., Sec. 18. On quarter section line	9 ft. brown, fibrous. 4 ft. black.
581	Hancock	Garfield Twp., Sec. 18. 175 yds. directly W. of No. 580	5 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
584	Cerro Gordo	Lake Twp., Sec. 19. 100 yds. S. and 100 yds. W. of Ne. corner Ne. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	14 ft. brown, fibrous, gradually changing to less fibrous.
597	Cerro Gordo	Lake Twp., Sec. 19. Nw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$. 75 yds. S. of center	4.5 ft. brown, fibrous.
585	Cerro Gordo	Lake Twp., Sec. 19. 220 yds. from S. line and 125 yds. from W. edge of bog	9 ft. brown, fibrous, changing to slightly fibrous.
586	Cerro Gordo	Lake Twp., Sec. 19	7 ft. brown, fibrous.
583	Cerro Gordo	Lake Twp., on line between Secs. 29 and 30, near south side	4 ft. brown, fibrous.
587	Cerro Gordo	Lake Twp., Sec. 29. Center Nw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous, gradually changing to less fibrous.
598	Cerro Gordo	Lake Twp., Sec. 29. Near middle north line of Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous, gradually changing to less fibrous.
591	Cerro Gordo	Lake Twp., Sec. 29. South side at center of neck of bog where it crosses road	5 ft. brown, fibrous.
592	Cerro Gordo	Mt. Vernon Twp., section line between 5 and 8 near middle	5 ft. brown, fibrous.
593	Cerro Gordo	Mt. Vernon Twp. 225 yds. due west of No. 592	5 ft. brown, fibrous.
596	Cerro Gordo	Mt. Vernon Twp., Sec. 8. 300 yds. Se. of No. 593	4 ft. brown, fibrous.
594	Cerro Gordo	Clear Lake Twp., Sec. 35. Near center Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous, gradually changing to less fibrous.
599	Cerro Gordo	Union Twp., Sec. 2. Near center Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	8 ft. brown, fibrous. Peat mud continues to a greater depth.
600	Cerro Gordo	Union Twp., Sec. 2. 175 yds. Ne. No. 599	3.5 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>nty</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
601	Cerro Gordo	Union Twp., Sec. 2. 150 yds. Se. of Nw. corner of Ne. $\frac{1}{4}$	5 ft. brown, fibrous.
602	Cerro Gordo	On Union-Clear Lake Twp. line, between sections 2 and 35. 200 yds. west of middle	5 ft. brown, fibrous.
614	Cerro Gordo	Union Twp. 200 yds. W. of center of Sec. 12	5 ft. brown, fibrous.
615	Cerro Gordo	Union Twp. Sw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$ of Sec. 12	5 ft. brown, fibrous, low grade.
616	Cerro Gordo	Union Twp., Sec. 11. Se. $\frac{1}{4}$ of Se. $\frac{1}{4}$, near center	7 ft. brown, fibrous.
617	Cerro Gordo	Union Twp., Sec. 12. Sw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$, near center	7 ft. brown, fibrous. Low grade peat continues down to 12 ft.
618	Cerro Gordo	Union Twp. Center of neck of bog on north line, 220 yds. from road on east line	4 ft. brown, fibrous.
619	Cerro Gordo	Union Twp. Near center of Se. quarter	8 ft. brown, fibrous.
620	Cerro Gordo	Union Twp. On $\frac{1}{2}$ Sec. line near road on east	6 ft. brown, fibrous, underlaid with blue clay.
621	Kossuth	Ramsay Twp., Sec. 26.	4 ft. brown, fibrous, changing to black peaty mud.
622	Kossuth	Ramsay Twp., Sec. 26. North side near center of bog	2.5 ft. brown, fibrous. 2.5 ft. black peaty mud. Peaty mud continues below 8 ft.
623	Kossuth	Ramsay Twp., Sec. 35. 250 yds. Nw. of center of section and at center of bog	2 ft. brown, fibrous. 2 ft. black peaty mud.
624	Kossuth	Greenwood Twp., Sec. 11. Ne. corner of bog, 100 yds. west on $\frac{1}{4}$ Sec. line	5 ft. brown, fibrous, grading downward into black peaty mud.
625	Kossuth	Greenwood Twp., Sec. 11. 100 yds. west of sample No. 624	6 ft. brown, fibrous, grading downward into black peaty mud.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
626	Kossuth	Greenwood Twp., Sec. 11. At center of bog	6.5 ft. brown, fibrous, grad- ing downward into black peaty mud.
634P	Kossuth	Sherman Twp., Sec. 14. Sw. corner, 50 yds. N. and 275 yds. E. of Sec. line	3 ft. brown, fibrous. 3 ft. black peaty mud.
635P	Kossuth	Sherman Twp., Sec. 23. 150 yds. Nw. of center of Sec.	3 ft. brown, fibrous. 2 ft. black peaty mud.
636P	Kossuth	Sherman Twp., Sec. 26. 325 yds. west from E. line and 200 yds. N. of $\frac{1}{4}$ line	4 ft. brown, fibrous. 1 ft. dark brown.
637P	Kossuth	Sherman Twp., Sec. 26. On east line near middle	4 ft. brown, fibrous.
638P	Kossuth	Sherman Twp., Sec. 25. Middle of neck of bog in Sw. $\frac{1}{4}$	4 ft. brown, fibrous.
639P	Kossuth	Sherman Twp., Sec. 26. Near bridge on north line road	5 ft. brown, fibrous.
640P	Clay	Freeman Twp., Sec. 23. 250 yds. Nw. center of Sec.	4 ft. brown, fibrous. Be- comes darker below.
641P	Clay	Freeman Twp., Sec. 23. Center of Nw. $\frac{1}{4}$	4 ft. brown, fibrous.
642P	Clay	Freeman Twp., Sec. 11. Near middle on S. line	4 ft. brown, fibrous. Very soft below.
643P	Palo Alto	Lost Island Twp., Sec. 11. 125 yds. from N. edge of bog	3 ft. brown, fibrous.
644P	Palo Alto	Lost Island Twp., Sec. 11. 200 yds. E. of sample No. 643P	3 ft. brown, fibrous.
645P	Palo Alto	Lost Island Twp., Sec. 11. Se. $\frac{1}{4}$, 440 yds. S. of lake and 150 yds. from road	3 ft. brown, fibrous.
638	Dickinson	Richland Twp., Sec. 17. Ne. $\frac{1}{4}$ of Se. $\frac{1}{4}$ near center of bog	3 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab.No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
639	Wright	Belmond Twp., Sec. 17. 300 yds. S. of Ne. corner	5 ft. brown, fibrous.
640	Hancock	Twin Lake Twp., Sec. 32. On E. and W. Sec. line and 100 yds. from edge of bog	4.5 ft. brown, fibrous.
641	Hancock	Twin Lake Twp., Sec. 32. 100 yds. N. of S. line of Sec. and 125 yds. from E. edge of bog	4.5 ft. brown, fibrous.
422	Hancock	German and Garfield Twp. line. 150 yds. E. of W. ditch	8.5 ft. brown, fibrous. 4 ft. brownish black. 6 ft. reddish brown.
423	Hancock	German & Garfield Twp. line. On west ditch	8.5 ft. brown, fibrous. 2.5 ft. brownish black. 6 ft. lighter brown.
424	Worth	Fertile Twp., Sec. 19. Se. ¼ near S. line	6 ft. brown, fibrous. 14 ft. brownish black.
425	Worth	Fertile Twp., Sec. 19. 150 yds. E. of N. of sample No. 424	10 ft. brown, fibrous, dark- er below. 1 ft. marly peat. 5 ft. brownish black.
426	Worth	Fertile Twp., Sec. 19. 200 yds. E. of N. of sample No. 425	12 ft. brown, fibrous, dark- er below. 4 ft. marly peat. 3 ft. brownish peat, hard.
427	Worth	Silver Lake Twp., on line of Secs. 13 and 14. At south bridge	25 ft. brown, fibrous, becom- ing darker and less fibrous below. Did not reach bottom.
428	Winnebago	Mt. Valley Twp., Sec. 25. Near middle south line	7 ft. brown, fibrous. 7 ft. brownish black. 5 ft. soft, non-fibrous peaty mud.
429	Worth	Silver Lake Twp., on line Secs. 13 and 14. At north bridge	Same as sample No. 427. Reached grit at 19 ft.
469	Wright	Belmond Twp., Sec. 16. Near north edge on east line	4.5 ft. brown, fibrous. 3.5 ft. brownish black.
470	Wright	Belmond Twp., Sec. 16. 375 yds. S. of sample No. 469	5 ft. brown, fibrous. 5.5 ft. brownish black.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
471	Wright	Belmond Twp., on line Secs. 7 and 8, 150 yds. from S. edge bog	3.5 ft. brown, fibrous. 8.5 ft. light brown. .5 ft. peaty mud. 5.5 ft. reddish brown. Did not reach bottom.
472	Wright	Belmond Twp., on line Secs. 7 and 8; middle of bog. N. of sample No. 471	4 ft. brown, fibrous. 7 ft. brown peat. Gravel below.
473	Wright	Belmond Twp., Sec. 7. Ne. $\frac{1}{4}$ near road	2.5 ft. brown, fibrous.
474	Hancock	German Twp., Sec. 5. 100 yds. S. of middle line and 100 yds. from E. side of bog	4 ft. brown, fibrous. 1.5 ft. brownish black.
475	Hancock	German Twp., Sec. 5. Mid- dle of bog west of sam- ple No. 474	4 ft. brown, fibrous. 3 ft. brownish black.
476	Hancock	German Twp., Sec. 5. Near west edge of bog in line with No. 474 and 475	3 ft. brown, fibrous. 1.5 ft. brownish black.
477	Wright	Iowa Twp., Sec. 23	The peaty marl from the lower portion of No. 388.
478	Cerro Gordo	Grimes Twp., Sec. 3. Along drain and due N. sample No. 404	3.5 ft. brown, fibrous. 8 ft. brownish black, grad- ing into gray. 13 ft. reddish brown.
479	Cerro Gordo	Union Twp., Sec. 34, W $\frac{1}{2}$	5.5 ft. brown, fibrous. 4 ft. brown. 1.5 ft. reddish brown. 8 ft. grayish brown, marly.
484	Hancock	German Twp., Sec. 33. 100 yds. due west of sample No. 414	2.5 ft. brown, fibrous. 5.5 ft. brownish black. 3 ft. grayish brown, marly. 7 ft. reddish brown.
485	Worth	Silver Lake Twp., Sec. 22. 600 yds. W. of E. line and 150 yds. N. of bridge	3 ft. brown, fibrous. 2 ft. brownish black. 6 ft. brown to light brown below.
486	Worth	Silver Lake Twp., Sec. 10. 100 yds. E. and 200 S. of Nw. corner of Sec. $\frac{1}{4}$ of Sec. $\frac{1}{4}$	5.5 ft. brownish black, fibrous above. No. 486 is lower part only.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
487	Winnebago	Norway Twp., Sec. 35. Nw. $\frac{1}{4}$	5 ft. brown, fibrous. 2.5 ft. brown, non-fibrous.
488	Winnebago	Norway Twp., Sec. 35. Same bog as sample No. 487	5 ft. brown, fibrous. 4.5 ft. brownish black.
489	Worth	Bristol Twp., Sec. 6. Sw. corner of Nw. $\frac{1}{4}$	7.5 ft. brown, fibrous. 3.25 ft. brownish black.
490	Worth	Bristol Twp., Sec. 6. About 150 yds. N. of sample No. 489	15.5 ft. brown, fibrous. darker and finer below.
491	Winnebago	Center Twp., Sec. 4. Sw. corner Nw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	3 ft. brown, fibrous. 3 ft. brownish black.
492	Worth	Silver Lake Twp., Sec. 10	Upper portion sample No. 486.
493	Worth	Silver Lake Twp., Sec. 22. 600 yds. W. of E. line and 150 yds. Nw. of bridge	3 ft. brown, fibrous. 2 ft. brownish black. 6 ft. brown, lighter below.
494	Winnebago	On Twp. line Norway and Center, Sec. 33, Norway and Sec. 4, Center Twp. At center of neck	5 ft. brown, fibrous. 10 ft. brown, non-fibrous. 6 ft. reddish brown.
495	Worth	Silver Lake Twp., Sec. 10. About 250 yds. Se. of No. 486	5.5 ft. brownish black. 4 ft. grayish brown. 3 ft. reddish brown. 7 ft. grayish brown, marly. Bottom not reached.
496	Worth	Silver Lake Twp., Sec. 22. 250 yds. Nw. of No. 493	4 ft. brown, fibrous. 1.5 ft. brownish black. 3.5 ft. light brown.
497	Winnebago	Norway Twp., on line between Secs. 22 and 23. 100 yds. from S. edge of bog	3 ft. brown, fibrous. 3.5 ft. brownish black. 4 ft. light brown.
498	Winnebago	Center Twp., Sec. 29. 150 yds. from Sw. corner Nw. $\frac{1}{4}$	5 ft. brown, fibrous. 2 ft. brownish black. 2 ft. brown, non-fibrous.
499	Winnebago	Center Twp., on line Secs. 10 and 11. 300 yds. S. of road	9 ft. brown, fibrous. 2 ft. brownish black.
500	Winnebago	Center Twp., Sec. 4. 150 yds. Nw. of sample No. 491	3 ft. brown, fibrous. 6 ft. brownish black. 7 ft. reddish brown.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
501	Winnebago	Center Twp., Sec. 10. 125 yds. E. of road and 100 yds. from ditch	9 ft. brown, fibrous. 4.5 ft. brownish black.
502	Winnebago	Center Twp., Sec. 29. 150 yds. due east from sample No. 498	5 ft. brown, fibrous. 4 ft. brownish black.
503	Winnebago	Norway Twp., on line between Secs. 17 and 18. Middle of bog	5 ft. brown, fibrous. 2 ft. brownish black.
504	Winnebago	Center Twp., Sec. 14. Center Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 6 ft. dark brown. 9 ft. reddish brown. Bottom not reached.
505	Winnebago	Norway Twp., Sec. 35. Center Nw. $\frac{1}{4}$	5 ft. brown, fibrous. 4 ft. brown, non-fibrous. 8 ft. brownish black to reddish below. 6 ft. grayish brown, marly.
506	Winnebago	Norway Twp., Sec. 35. Sw. $\frac{1}{4}$. E. of sample No. 488 and 150 yds. from east edge	6.5 ft. brown, fibrous. 1 ft. brownish black.
507	Winnebago	Norway Twp., on line between Secs. 22 and 23. 150 yds. from north side of sections	5 ft. brown, fibrous. 4 ft. brownish black. 3.5 ft. reddish brown.
508	Winnebago	Norway Twp., on road between Secs. 14 and 15. 100 yds. N. of middle line	5 ft. brown, fibrous. 4 ft. brownish black. 4 ft. brown, non-fibrous. 2 ft. reddish brown. 5 ft. grayish, peaty marl.
509 (Top)	Winnebago	Norway Twp., on line Secs. 7 and 8. Middle of bog	3 ft. brown, fibrous. 2 ft. brownish black. 4 ft. grayish brown, marly
510	Winnebago	Norway Twp. Same as sample No. 509	Same as No. 509, lower part of section.
689	Hancock	Madison Twp., Sec. 16. Se. $\frac{1}{4}$ of Sw. $\frac{1}{4}$ near Nw. corner	4 ft. brown, fibrous.
690	Hancock	Madison Twp., Sec. 20. Near Ne. corner	3.5 ft. brown, fibrous.
691	Webster	Clay Twp., Sec. 36. 150 yds. S. of middle of W. line of Ne. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	3 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
692	Webster	Burnside Twp., Sec. 31. 200 yds. Sw. of center of section	2 ft. brown, fibrous.
693	Webster	Lost Grove Twp., on sec- tion line Secs. 13 and 24, near middle	3 ft. brown, fibrous.
557	Winnebago	Mt. Valley Twp., Sec. 6. Middle of W. side of Ne. $\frac{1}{4}$ of Se. $\frac{1}{4}$	8 ft. brown, fibrous. Gray, marly peat below.
558	Winnebago	Mt. Valley Twp., Sec. 6. Near Ne. corner	8 ft. brown, fibrous. 1 ft. brown.
559	Winnebago	Mt. Valley Twp., Sec. 22. 100 yds. Sw. from Ne. corner Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 1 ft. brownish black.
560	Winnebago	Mt. Valley Twp., Sec. 22. Center Ne. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	9 ft. brown, fibrous. 1 ft. brown.
561	Winnebago	Mt. Valley Twp., Sec. 17. Center Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	7 ft. brown, fibrous. 6 ft. brown.
562	Winnebago	Mt. Valley Twp., Sec. 17. Middle N. line of Sw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 6 ft. brown. Clayey, sandy peat below.
563	Winnebago	Mt. Valley Twp., Sec. 17. Se. corner Sw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	8 ft. brown, fibrous. Peat continued down 25 ft. but too soft to sample.
564	Winnebago	Mt. Valley Twp., Sec. 17. Center Ne. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	9 ft. brown, fibrous. 9 ft. brown, non-fibrous. Peat continues down more than 30 ft.
565	Winnebago	Mt. Valley Twp., Sec. 8. Center Se. $\frac{1}{4}$ of Se. $\frac{1}{4}$	7 ft. brown, fibrous. 3 ft. brownish black. Darker below.
566	Winnebago	Mt. Valley Twp., Sec. 8. 100 yds. Nw. of Se. cor- ner of Sw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	5 ft. brown, fibrous. 4 ft. brownish black.
567	Winnebago	Mt. Valley Twp., Sec. 16. Center Se. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	8 ft. brown, fibrous.
568	Winnebago	Mt. Valley Twp., Sec. 16 100 yds. Nw. from Se. corner of Nw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
(069)	Winnebago	Mt. Valley Twp., Sec. 16. 150 yds. Sw. from sam- ple No. 568	7 ft. brown, fibrous.
569	Winnebago	Mt. Valley Twp., Sec. 17. Center Se. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous.
570	Winnebago	Mt. Valley Twp., Sec. 17. Center Nw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	7 ft. brown, fibrous 6 ft. brown, non-fibrous.
571	Winnebago	Mt. Valley Twp., Sec. 17. 200 yds. N. Sec. line	7 ft. brown, fibrous.
573	Winnebago	Mt. Valley Twp., Sec. 17. Center Sw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	13 ft. brown, fibrous, be- coming less fibrous below.
572	Hancock	Garfield Twp., Sec. 10. Center Ne. $\frac{1}{4}$ of Se. $\frac{1}{4}$	5 ft. brown, fibrous. 1 ft. brownish black.
574	Hancock	Concord Twp., Sec. 5. 100 yds. Sw. from Ne. cor- ner of Nw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	8 ft. brown, fibrous. 1 ft. brown, non-fibrous.
590	Cerro Gordo	Grant Twp., line between Secs. 34 and 35, near middle	9 ft. brown, fibrous.
595	Cerro Gordo	Grant Twp., Sec. 25. 200 yds. south sample No. 590	5 ft. brown, fibrous.
605	Cerro Gordo	Grant Twp., Sec. 25. 300 yds. E. of center of sec- tion	5 ft. brown, fibrous. 4 ft. brown, non-fibrous. 5 ft. reddish brown.
606	Cerro Gordo	Grant Twp., Sec. 25. 150 yds. E. from center of section	5 ft. brown, fibrous. 3 ft. brown, non-fibrous. 4 ft. marly peat.
607	Cerro Gordo	Grant Twp., Sec. 25. 400 yds. S. and 200 yds. W. of Ne. corner of Nw. $\frac{1}{4}$	4 ft. brown, fibrous. 4 ft. brownish black.
608	Cerro Gordo	Grant Twp., Sec. 15. 200 yds. S. and 200 yds. W. of Ne. corner of section	5 ft. brown, fibrous. 3 ft. brown, non-fibrous. 2 ft. reddish brown.
609	Cerro Gordo	Grant Twp., Sec. 15. 250 yds. W. of sample No. 608	4 ft. brown, fibrous.
610	Cerro Gordo	Grant Twp., Sec. 22. Cen- ter Nw. $\frac{1}{4}$ of Sw. $\frac{1}{4}$	7 ft. brown, fibrous. 3 ft. brown, non-fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
611	Cerro Gordo	Grant Twp., Sec. 22. 250 yds. S. from sample No. 610	5 ft. brown, fibrous. 1 ft. brown, non-fibrous.
613	Cerro Gordo	Grant Twp., Sec. 31. 200 yds. E. from center of section	5 ft. brown, fibrous. 3 ft. brown, non-fibrous.
627	Cerro Gordo	Union Twp., Sec. 20. 200 yds. S. of Ne. corner of Se. $\frac{1}{4}$	6 ft. brown, fibrous.
628	Cerro Gordo	Clear Lake Twp., Sec. 26. 400 yds. N. of center of Se. $\frac{1}{4}$	5 ft. brown, fibrous. 4 ft. brown, non-fibrous.
629	Emmet	Iowa Lake Twp., Sec. 34. Center Nw. $\frac{1}{4}$ of Se. $\frac{1}{4}$	3 ft. brown, fibrous.
630	Emmet	Iowa Lake Twp., Sec. 34. Center Sw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	5 ft. brown, fibrous.
631	Emmet	Iowa Lake Twp., Sec. 34. Center of Sw. $\frac{1}{4}$	5 ft. brown, fibrous.
632	Emmet	Iowa Lake Twp., Sec. 34. Center Nw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	4 ft. brown, fibrous.
633	Kossuth	Swea Twp., Sec. 4. Center Nw. $\frac{1}{4}$ of Ne. $\frac{1}{4}$	4 ft. brown, fibrous.
642	Wright	Lake Twp., Sec. 1. 500 yds. from Sec. line and 125 yds. from N. side of bog	4 ft. brown, fibrous. Thin sand seam below.
643	Wright	Lake Twp., Sec. 1. 125 yds. from S. edge of bog along ditch	4 ft. brown, fibrous.
644	Hancock	German Twp., Sec. 4. Sw. $\frac{1}{4}$, on N. line 100 yds. W. of ditch	4 ft. brown, fibrous.
645	Hancock	German Twp., Sec. 4. Sw. $\frac{1}{4}$	Same as No. 644, taken below 4 ft. down to 6.5. Brownish black peat.
646	Hancock	German Twp., Sec. 9. 200 yds. S. of Sec. line on ditch	2.5 ft. brown, fibrous.

TABLE II—CONTINUED

<i>Lab. No.</i>	<i>County</i>	<i>Detailed Location of Sample</i>	<i>Description of Section</i>
647	Hancock	Crystal Twp., Sec. 23. On N. and S. $\frac{1}{2}$ Sec. line, 150 yds. from S. side of bog	3.5 ft. brown, fibrous.
648	Hancock	Madison Twp., Sec. 19. 200 yds. east of middle, S. line of Sw. $\frac{1}{4}$ of Nw. $\frac{1}{4}$	4 ft. brown, fibrous.
649	Webster	Clay Twp., Sec. 36. On N. line 250 yds. W. of the middle	4 ft. brown, fibrous.
650	Webster	Burnside Twp., Sec. 31. Near middle south line	2 ft. brown, fibrous.
685	Wright	Belmond Twp., Sec. 17. On east line, 300 yds. S. of corner	5 ft. brown, fibrous.
686	Hancock	Crystal Twp., Sec. 35. Center Ne. $\frac{1}{4}$	4 ft. brown, fibrous.
687	Hancock	Crystal Twp., Sec. 25. 200 yds. NNe. from Sw. corner	3.5 ft. brown, fibrous.
688	Hancock	Crystal Twp., Sec. 25. 250 yds. S. of Nw. corner	4 ft. brown, fibrous.

TABLE III

Gives laboratory number, proximate chemical analyses of air dried samples, and calorimetric analyses of Iowa peats.

Laboratory Number	Proximate Analysis				Calorime- tric Anal- ysis in B. T. Us.
	Moisture	Volatile and Com- bustible Matter	Fixed Carbon	Ash	
350	6.33	44.16	8.26	41.25	5535
351	7.49	47.53	11.52	33.46	6815
352	6.61	40.59	5.66	47.14	4878
353	7.13	49.31	11.13	32.43	6234
354	8.66	52.47	15.38	23.49	7699
355	5.05	32.10	5.41	57.44	
356	4.40	42.39	6.65	46.56	4691
357	4.31	30.83	5.03	59.83	
358	5.36	24.21	5.88	64.55	
359	4.87	39.85	6.35	48.93	4973
360	5.67	47.67	6.03	40.63	4894
361	4.84	29.42	4.83	60.91	
362	5.48	31.90	7.77	54.85	4317
363	6.60	40.86	4.34	48.20	5626
364	3.99	50.45	5.31	40.25	4863
365	5.63	53.55	8.31	32.51	6047
366	2.03	10.33	.18	87.46	
367	3.76	20.27	3.51	72.46	
368	4.49	39.00	4.42	52.09	
369	3.80	35.84	2.75	57.61	
370	3.91	34.99	3.57	57.53	
371	3.64	32.90	1.50	61.96	
372	2.91	19.21	1.99	75.89	
373	5.80	33.83	5.16	55.21	
374	5.82	28.94	6.43	58.81	
375	3.28	15.04	.07	81.61	
376	3.08	26.54	1.61	68.77	
377	4.12	35.41	2.97	57.50	
378	2.94	11.85	.80	84.41	
379	3.07	17.37	2.15	77.41	
380	1.86	13.90	.95	83.29	
381	2.27	12.21	.57	84.95	
382	3.43	8.65	.03	87.89	
383	3.37	11.80	.54	84.29	
383.5	4.47	17.40	1.87	76.26	
384	3.66	14.99	2.75	78.60	
385	4.00	23.92	1.85	70.23	
386	4.07	12.05	.94	82.94	
387	2.85	12.50	.56	84.09	
388	2.58	9.47	.00	87.95	
389	2.59	19.89	.00	77.52	
390	1.86	11.90	.32	85.92	
391	2.60	13.27	.35	83.78	
392	2.71	15.08	.86	81.35	
393	3.28	18.10	1.00	77.62	

PEAT DEPOSITS IN IOWA

TABLE III—CONTINUED

Laboratory Number	Proximate Analysis				Calorime- tric Anal- ysis in B. T. Us.
	Moisture	Volatile and Com- bustible Matter	Fixed Carbon	Ash	
394	3.90	25.98	2.82	67.30	
395	3.31	20.81	1.77	74.11	
396	3.82	25.66	3.31	67.21	
397	3.48	25.09	3.46	67.97	
398	2.80	26.85	1.97	68.38	
399	3.52	26.34	1.43	68.71	
400	4.04	30.36	3.03	62.57	
401	2.97	24.26	1.72	71.05	
402	4.03	36.92	2.73	56.32	
403	3.76	39.65	2.99	53.60	
404	4.12	34.36	2.19	59.33	
405	3.40	22.79	1.24	72.57	
406	3.66	30.23	1.00	65.11	
407	3.66	29.56	1.86	64.92	
408	3.68	40.85	4.89	50.58	4333
409	4.65	35.26	7.40	52.69	
410	5.93	36.45	10.37	47.25	5018
411	5.83	40.52	9.77	43.88	
412	3.61	33.25	2.20	60.94	
413	2.98	23.61	3.40	70.01	
414	3.36	20.33	2.03	74.28	
415	2.90	20.76	1.83	74.51	
416	2.89	19.45	3.05	74.61	
417	6.62	43.28	7.87	42.23	5018
418	2.91	24.23	1.17	71.69	
419	6.22	44.98	13.03	35.77	5922
420	7.00	45.70	14.29	33.01	6312
421	7.24	49.87	14.14	28.75	6686
422	3.97	27.67	3.56	64.80	
423	4.88	30.78	2.56	61.78	
424	4.67	26.93	3.60	64.80	
425	4.53	27.05	5.13	63.29	
426	4.60	45.05	2.83	47.52	4551
427	5.78	44.99	7.40	41.83	5096
428	5.48	43.58	6.01	44.93	4582
429	6.02	45.05	10.93	38.00	5829
469	8.97	25.49	3.73	61.81	
470	7.50	21.87	.96	69.67	
471	7.58	24.96	1.43	66.03	
472	9.78	36.10	3.32	50.80	
473	12.10	44.43	6.72	36.75	
474	10.45	31.23	5.47	52.85	
475	9.64	27.49	2.24	60.63	
476	6.99	18.14	.15	74.72	
477	5.32	7.60	.65	86.43	
478	6.71	36.67	2.64	53.98	
479	7.73	45.65	3.84	42.78	4676
484	5.00	23.29	.80	70.91	
485	6.44	18.09	9.76	65.71	

ANALYSES OF PEATS

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TABLE III—CONTINUED

<i>Laboratory Number</i>	<i>Proximate Analysis</i>				<i>Calorime- tric Anal- ysis in B. T. Us.</i>
	<i>Moisture</i>	<i>Volatile and Com- bustible Matter</i>	<i>Fixed Carbon</i>	<i>Ash</i>	
486	13.22	40.31	4.28	42.19	-----
487	12.84	45.79	11.03	30.34	-----
488	17.04	49.04	7.83	26.09	-----
489	19.74	49.60	12.18	18.48	6624
490	19.61	48.07	13.49	18.83	6764
491	13.76	36.55	7.32	42.37	-----
492	18.26	49.57	13.03	19.14	6889
493	13.00	37.98	8.92	40.10	-----
494	10.12	35.30	2.53	52.05	-----
495	8.76	37.62	2.18	51.44	-----
496	9.30	31.72	3.44	55.54	-----
497	7.46	28.51	.90	63.13	-----
498	10.55	33.91	5.04	50.50	4270
499	10.85	50.71	13.29	25.15	7169
500	7.54	34.08	5.28	53.10	-----
501	8.51	51.16	7.80	32.53	5876
502	6.48	33.46	5.11	54.95	-----
503	5.83	24.45	1.01	68.71	-----
504	7.68	50.55	4.67	37.10	5081
505	7.26	39.03	2.69	51.02	-----
506	8.25	45.04	10.18	36.53	5720
507	5.96	30.07	1.22	62.75	-----
508	7.19	41.10	3.38	48.33	4239
509	8.85	35.43	6.67	49.05	4177
510	2.80	34.68	0.00	62.52	-----
511	9.39	51.25	6.67	32.69	5346
512	10.19	40.00	5.23	44.58	4629
513	10.62	41.63	7.06	40.69	4847
514	10.07	55.10	14.65	20.18	7418
515	10.75	49.59	14.38	25.28	7060
516	6.34	50.79	3.86	39.01	4582
517	9.04	45.67	11.68	33.61	6483
518	6.32	47.54	6.00	40.14	5144
519	5.77	25.44	8.17	60.62	-----
520	6.67	42.08	1.80	49.45	4052
521	4.95	42.27	2.45	50.33	-----
522	7.88	36.39	4.27	51.46	-----
523	6.24	35.86	10.85	47.05	4005
524	5.76	45.98	1.00	47.26	3943
525	7.74	47.59	6.77	37.90	5330
526	6.52	47.60	4.25	41.63	5034
527	4.71	37.74	1.84	55.71	-----
528	3.85	38.87	.36	56.92	-----
529	8.94	45.26	6.27	39.53	5284
530	6.72	46.89	8.75	37.64	6312
531	4.90	30.38	3.49	61.23	-----
532	8.48	42.20	10.68	38.64	5751
533	11.27	51.18	13.32	24.23	6951
534	5.35	41.04	3.03	50.58	-----
535	6.83	34.61	8.29	50.27	-----

TABLE III—CONTINUED

Laboratory Number	Proximate Analysis				Calorime- tric Anal- ysis in B. T. Us.
	Moisture	Volatile and Com- bustible Ma	Fixed Carbon	Ash	
536	8.94	49.02	13.33	28.71	6764
537	8.90	46.36	10.42	34.32	6078
538	4.39	48.45	3.24	43.92	4442
539	13.91	44.41	12.44	29.24	6203
540	8.04	39.03	6.70	46.23	4691
541	6.16	46.07	2.10	45.67	4052
542	6.71	41.95	8.13	43.21	5159
543	5.38	39.06	7.11	48.45	4800
544	3.44	30.11	1.68	64.77	
545	6.73	46.90	18.22	28.15	6483
546	5.56	38.00	5.47	50.97	
547	3.62	40.88	1.08	54.42	
548	5.83	39.90	.03	54.24	
549	4.40	29.65	4.65	61.30	
550	3.30	37.18	1.35	58.17	
551	6.88	46.54	5.50	41.08	4956
552	8.03	51.10	11.03	29.84	6702
553	9.50	48.86	10.62	31.02	5844
554	5.49	53.51	4.49	36.51	5050
555	4.26	27.96	4.13	63.65	
556	2.35	28.01	4.38	65.26	
557	6.92	52.41	5.17	35.50	5408
558	5.16	44.60	2.88	47.36	4364
559	7.45	47.62	13.75	31.18	6655
560	4.55	49.29	6.97	39.19	5377
561	5.74	44.10	10.82	39.34	5626
562	5.75	51.00	9.70	33.55	6000
563	5.89	63.59	16.39	14.13	8431
564	5.97	49.89	6.01	38.13	4863
565	6.38	44.31	8.70	40.61	5455
566	4.50	42.30	12.20	41.00	5953
567	6.53	51.10	12.82	29.55	6421
568	5.29	38.83	11.69	44.19	5564
569	6.60	49.70	11.60	32.10	6405
570	5.99	49.82	6.37	37.82	5392
571	6.44	50.29	13.87	29.40	7044
572	7.49	44.44	12.81	35.26	6109
573	7.85	53.41	3.36	35.38	5253
574	8.09	51.50	13.39	27.02	7138
575	7.52	55.53	3.03	33.92	4863
576	9.13	52.75	14.87	23.25	7247
577	6.98	46.27	9.08	37.67	5657
578	3.70	39.59	4.64	52.07	
579	17.65	38.42	11.96	31.97	6499
580	5.12	40.77	5.62	48.49	4691
581	4.71	23.96	4.34	66.99	
582	4.35	35.20	2.31	58.14	
583	8.20	45.35	14.57	31.88	6094
584	6.98	46.12	6.90	39.995	5455

TABLE III—CONTINUED

Laboratory Number	Proximate Analysis				Calorime- tric Anal- ysis in B. T. Us.
	Moisture	Volatile and Com- bustible Matter	Fixed Carbon	Ash	
585	4.67	49.53	8.12	37.68	5408
586	6.02	50.96	11.14	31.85	6078
587	4.49	46.04	10.22	39.25	5595
588	6.62	34.44	7.57	51.37	-----
589	5.85	40.16	4.38	49.61	4005
590	7.90	47.86	14.12	30.12	6546
591	8.17	47.46	18.24	26.14	6857
592	10.25	32.25	7.14	50.36	-----
593	9.03	51.57	10.93	28.47	6063
594	7.30	50.71	17.10	24.89	6452
595	7.97	52.94	16.60	22.49	7122
596	7.99	52.61	15.47	23.93	6904
597	11.91	50.23	17.02	20.84	6966
598	11.81	45.03	23.51	19.66	6125
599	8.25	35.47	16.45	39.83	4676
600	7.08	43.65	11.88	37.39	6031
601	7.78	47.55	4.83	39.84	4333
602	6.87	47.82	4.52	40.79	4785
603	10.42	43.24	12.57	33.77	5517
604	7.38	38.05	9.05	45.52	4722
605	7.72	42.78	8.71	40.79	5096
606	11.86	48.31	9.80	30.03	5735
607	6.73	42.22	2.90	48.15	5907
608	8.11	41.32	8.46	42.11	4894
609	10.61	38.20	13.46	37.73	5533
610	9.52	43.09	9.62	37.77	5096
611	7.98	39.55	15.43	37.04	6078
613	9.37	41.03	12.44	37.16	-----
614	12.35	45.78	10.20	31.67	5517
615	8.69	36.34	6.52	48.45	5813
616	9.89	43.39	11.72	35.00	4255
617	9.86	45.07	10.17	34.90	5548
618	11.11	43.72	10.98	34.19	5330
619	10.31	44.55	7.44	37.70	5795
620	9.41	42.54	7.24	40.81	4856
621	11.73	49.50	12.31	26.46	6390
622	9.65	43.47	7.72	39.16	4863
623	9.34	34.71	5.90	50.05	-----
624	5.42	20.71	3.35	70.52	-----
625	4.80	15.87	2.13	77.20	-----
626	5.02	19.49	2.80	72.69	-----
627	7.43	30.91	6.22	55.44	-----
628	7.87	39.19	8.40	44.54	4722
629	6.04	33.34	8.02	52.60	-----
630	9.00	42.78	12.06	36.16	6140
631	6.39	43.05	11.87	38.69	5876
632	7.75	33.08	8.73	50.44	-----
633	6.75	31.79	7.58	53.88	-----
634P	8.56	23.96	3.69	63.79	-----

TABLE III—CONTINUED

<i>Laboratory Number</i>	<i>Proximate Analysis</i>				<i>Calorime- tric Anal- ysis in B. T. Us.</i>
	<i>Moisture</i>	<i>Volatile, and Com- bustible Matter</i>	<i>Fixed Carbon</i>	<i>Ash</i>	
635P -----	11.63	40.59	21.72	26.06	6390
636P -----	10.51	51.61	13.80	24.09	6811
637P -----	9.58	38.03	8.24	44.15	4707
638P -----	10.71	44.98	8.01	36.30	5159
639P -----	11.33	45.19	11.35	32.13	6031
640P -----	9.31	46.35	8.84	35.50	5096
641P -----	9.73	40.51	9.00	40.76	4894
642P -----	12.64	43.46	14.82	29.08	6296
643P -----	11.65	38.88	11.68	37.79	5986
644P -----	9.91	56.68	7.07	26.34	5798
645P -----	9.97	50.28	10.47	29.28	6099
638 -----	6.60	40.19	9.01	44.20	5628
639 -----	8.89	45.60	8.17	37.34	5549
640 -----	7.36	41.58	7.63	43.43	4987
641 -----	5.90	40.40	10.90	42.80	6079
642 -----	6.15	49.09	17.51	27.25	5440
643 -----	5.22	46.59	15.96	32.23	6655
644 -----	9.78	53.48	13.64	23.10	7169
645 -----	6.03	34.66	5.46	53.85	-----
646 -----	6.88	49.49	13.60	30.03	6492
647 -----	7.55	54.57	15.67	22.21	7278
648 -----	7.77	49.36	15.46	27.41	7013
649 -----	6.77	47.69	14.27	31.27	6468
650 -----	7.53	40.40	11.06	41.01	5720
651 -----	5.97	21.63	1.59	70.81	-----
652 -----	5.07	12.95	.47	81.51	-----

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