the sprinkling filter, led to a heavy growth. By stopping the filter the humidity of the atmosphere immediately over the surface was changed, stopping further growth and the worms and micro-organisms in the bed destroyed the growth already there. What would happen to a bed if this growth was not destroyed but allowed to continue on the bed was then the problem. We found that the growth over the bed became almost water-tight, the sewage pooling on the surface. The micro-organisms living on the fungus destroyed the old growth but a new growth kept constantly forming on the surface precipitating upon decay a humus which filled the interstices of the stone under the fungus until the original surface of the bed was covered by several inches of organic matter. The conditions in the bed, instead of being aerobic became anaerobic. Analysis of the gas in the bed showed entire absence of oxygen and the effluent on analysis showed the oxygen consumed in 5 minutes to be double that of a corresponding effluent from a properly working filter. In fact, except for the exceptionally large amount of suspended solids the effluent was not unlike that of a septic tank. An investigation of the condition inside the filter at this stage showed that the humus was generally distributed throughout the filter.

What is the effect of depth in the action of a sprinkling filter? To answer this question troughs were placed at different depths—7 in., 13 in. and 18 in.—in the bed and a series of analyses run on the effluent at these depths for comparison with the final effluent which had passed through 5 ft. 6 in. of stone.

Analyses of Sewage During Passage Through a Sprinkling Filter.

(46 Average Analyses—May 16th to September 19, 1912).

	Free ammonia.	Albuminoid ammonia.	Oxygen consumed.
Raw sewage	19.17	11.5	64.0
After 6 inches	22.2	7.7	42.6
After 12 inches	17.5	6.1	37.6
After 18 inches	14.0	4.1	31.3
At 5½ feet	7.5	1.9	12.6

Chemical Composition of Humus in the Effluent of Sewage Disposal Beds—Water Was Applied Instead of Sewage.

Contact Bed—Glass Media. June 25th, 1912.

Time in minutes after starting operations.	Free ammonia.	Albuminoid ammonia.	Oxygen consumed.	Nitrites.	Nitrates.
0	2.17	.67	6.05	.08	22.4
5	....	....	....	.03	18.8
10	1.07	.37	4.5	trace.	14.0
15	....	....	....	.015	12.8
20	.85	0	3.85	.02	14.0
25	....	....	....	.015	10.4
30	.75	0	3.16	.02	10.0
35	....	....	....	.03	9.0
40	.95	0	2.11	.03	10.0
45	....	....	....	.025	13.6
50	.65	....	2.93	.02	14.8
55	....	....	....	.005	14.8
60	.85	.10	3.0	trace.	16.0
70	....	....	....	.....	....
80	....	....	....	.....	....
90	....	....	....	.....	....
Final drippings	21.6	2.67	18.6	0.1	28.0

Contact Bed—Coke Media. June 25th, 1912.

Free ammonia.	Albuminoid ammonia.	Oxygen consumed.	Nitrites.	Nitrates.
.37	.175	3.76	.07	0.6
....	....	....	.01	0.8
.125	.23	3.48	.02	7.5
....	....	....	trace.	8.7
.27	.27	.55	.005	7.6
....	....	....	.01	9.0
.27	.07	1.92	trace.	10.0
....	....	....	"	10.0
.37	.20	4.03	"	10.0
....	....	....	"	10.0
.30	.75	1.92	"	10.0
....	....	....	"	10.0
.125	.27	13.8	"	10.0
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
5.07	1.67	9.5	0.1	6.0

Intermittent Sand Filter. June 20th, 1912.

Time in minutes after starting operations.	Free ammonia.	Albuminoid ammonia.	Oxygen consumed.	Nitrites.	Nitrates.
0	2.30	.25	3.86	.06	2.2
5	....	....	....	....	....
10	....	....	....	0.11	12.2
15	....	....	....	....	....
20	....	....	....	0.10	11.56
25	....	....	....	....	....
30	2.55	.55	7.52	.08	11.28
35	....	....	....	....	....
40	....	....	....	.16	11.08
45	....	....	....	....	....
50	....	....	....	.14	11.08
55	....	....	....	....	....
60	2.7	.50	7.16	0.14	10.8
70	....	....	....	.13	10.36
80	....	....	....	.13	10.36
90	2.1	.7	9.36	0.10	.....
Final drippings	....	....	....	....	.....

Intermittent Sand Filter. June 24th, 1912.

Free ammonia.	Albuminoid ammonia.	Oxygen consumed.	Nitrites.	Nitrates.
.47	.07	2.02	trace.	12.0
....	....	....	....	....
....	....	....	trace.	16.8
....	....	....	....	....
....	....	....	.005	25.6
....	....	....	....	....
.37	.27	2.5	.012	21.6
....	....	....	....	...
....	....	....	.03	18.0
....	....	....	....	....
....	....	....	.05	16.0
....	....	....	....	....
.77	.37	3.4	.05	12.0
....	....	....	.06	9.2
....	....	....	.09	10.8
.77	3.7	2.6	.05	8.6
....	....	....	.14	8.4