346 has pointed out the parallel between theory (I) in 221—the one for which Theophrastus is explicitly cited—and 184 18-22; but it seems likely that Theophrastus used similar material in two discussions, one on the saltiness of the sea used by Alexander, and the other on the interchange of the elements in the context of the eternity of the universe, used by Philo. The names of Anaximander and Diogenes are not mentioned in 184.

Theory (I) is cited by Anonymus Londinensis XXX 15-24 (Suppl. Ar. 3.1 p.56 Diels) as being used by the "ancients" as an analogy to explain the production of urine. With (II) cf. Lucretius, 5.487-8. As for (III), the theory that water is flavoured by the soil through which it passes, this is applied by Theophrastus himself to spring-waters in 212; cf. also Anonymus Londinensis XXIV 38-46 (Suppl. Ar. 3.1 pp.44-5 Diels).628 But in the case of the saltiness of the sea Theophrastus' explanation depends not on filtration but on salty water rising from the sea-bed; see above on 220.

**SALT AND SODA**


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628 For Theophrastus' view that water is tasteless in itself cf. Diels (1905), at 310-16; Steinmetz (1964) 296 and n.6. Diels, followed by Regenbogen (1940) 1429, argues that it was from Theophrastus that Pliny 31.70 got the notorious claim that salt water is made fresh by permeating through a vessel of wax (Aristotle, Meteorology 2.3 358b35-359a5, HA 8.2 590a24-7; Aelian, On the Nature of Animals 9.64 = 417 no. 21; Olympiodorus, On Aristotle's Meteorology 158.27-36. Cf. Steinmetz (1964) 296 and n.6, noting that Theophrastus, CP 6.10.2 has the statement, found also in Aelian's account, that fish are nourished by the fresh water that is present in the sea (similarly also Aristotle, HA 8.2, but specifically of shellfish.) As D.M. Balme, Aristotle: History of Animals books vii-x, LCL 1991, 82-3 n.(a) notes, Albert the Great, On Animals 7.1.2 (p.502.21-6 Stadler) observes that the experiment will work with an earthenware vessel but not with a wax one *(dicunt guidam ... sed non est expertum).* For water being desalinated by percolating through earth cf. Pliny loc. cit., Lucretius 2.476, 5.269, 6.635, and Seneca, NQ 3.5 (the last three of these passages in connection with the replenishing of rivers from the sea); also, for into holes dug in the ground near the seashore, [Aristotle], Problems 23.37 (but of the initial water only; and for a different view id. 23.21). Serbat (1972) 152.
Overview: Sources

Theophrastus wrote a treatise *On Salts, Soda and Alum* (= 137 no. 25). In book 31 of the *Natural History* Pliny has extensive discussions first of salt (31.73-105) and then of soda (31.106-22); and Theophrastus is cited in both. However, the reference in the context of salt (222) is only in passing, while in that of soda Theophrastus is mentioned at the start of the whole discussion (223.3-4). Steinmetz claims ([1964] 317) that in Pliny's discussion of salt 31.73-92 come from Theophrastus and Varro (Varro being named at 31.89), and that 71-78a, 80-88a, and 90-2 are from Theophrastus; but this is conjectural. Steinmetz notes, as indicating a possible connection with Theophrastus, the statement at Pliny 31.76 that warm springs are salty (cf. also 214A 47 and the Commentary there); the reference to Ptolemy (with no further title, and therefore, Steinmetz argues, Ptolemy I) at 31.78; the sterility produced by salt (31.80, cf. *CP* 6.10.1-2 and, of soda, *CP* 2.5.1 and 223.49)\(^2\), the connection (31.82, 91) between salt and oil, for which cf. 223 25-6 and the Commentary there; the parallel between Pliny 31.82 and Aristotle, *Meteor.* 2.3 359a24-35, on the production of salt from a spring in Chaonia; and the general methodology of classifying types of salt at 31.84-88a.

As for the discussion of soda, Regenbogen and Steinmetz see a clear break, and a change to medical sources, at §116. Steinmetz (1964) 312 argues that the material in our 223 is—perhaps indirectly—from Theophrastus. Pamela Huby notes in this regard the references to Thrace, Macedon and Calchis in 223.5-10 and 27-8. There are parallels to other works of Theophrastus in 223.6-8, 49, 55-6 (see the apparatus), to [Aristotle], *Problems* 23.40 in 223.25-6 and to *Mirabilia* 53 (for which see above, 210-221 Overview: Sources) in 223.27. Steinmetz (1964) 313-14 suggests that an introductory general discussion of the nature of soda has been omitted by Pliny, whose interest is in facts rather than explanations, and that Pliny has then compressed Theophrastus' account of the different types of soda, saying little about that produced from wood (6-8)\(^3\) and

\(^2\) However, while Theophrastus at *CP* 2.5.1 insists that water that is soda-like allows nothing at all to grow, he makes an exception for sea-water and marine plants; at *CP* 6.10.2 he argues that marine plants are nourished by flavours in the water other than the salty. See above, n.628.

\(^3\) Similarly in the case of salt where, according to Steinmetz (1964) 319-20, 222 is all that remains in Pliny of Theophrastus’ discussion of salt