

V.—DISCUSSION.

THE MYTH OF OCCAM'S RAZOR.

1. FROM the middle of the Nineteenth Century, nearly every modern book on Logic has contained the words: *Entia non sunt multiplicanda, prater necessitatem*: quoted as if they were the words of William of Ockham. But nobody gives a particular reference to any work of the Singular and Invincible Doctor: sometimes also, as on the title-page of his *De Sacramento Altarit* (1513), described as the *Venerabilis Inceptor* (of "Terminism" ?). We turn in vain even to Sir William Hamilton, *facile princeps* (among English writers) in philosophical learning; or to his nearest rival, his disciple Dean Mansel. And my own fruitless inquisition for the formula, in those works of Ockham which have been printed, has led me to disbelieve that he ever used it to express his Critique of Entities.

2. This disbelief is further justified by what I find, and cannot find, in laborious recent histories of Medieval philosophy. Haureau (in his *Philosophic Scholastique*, vol. ii., chap. xxviii., pp. 438, 442, 446); Erdmann (in his *History of Philosophy*, vol. i., § 216); and De Wulf (in his *Medieval Philosophy*, p. 368); all concur in giving another set of words, as those usually employed by Ockham: "• Fluralitas non est ponenda (or Non est ponenda pluralitas) sine necessitate". They do not even mention the common form of the *Novaculum Nominalium*. Nor does Prantl, in his large collection of citations (*Geschichte der Logik*, iii., pp. 327-420); though one of them (Note 758) contains: "Nunquam ponenda est pluralitas sine necessitate". Nor does Stockl, in his very full *Geschichte der Philosophie des Mittelalters*, §§ 259-266, pp. 986-1021 in the second volume. He selects: "Frustra fit per plura, quod potest fieri per pauciora": as distinctive of Ockham in this connexion. So did the earlier historian Tennemann: *Geschichte der Philosophie*, p. 851 in band viii. (1810). In England this phrase even became a legal maxim: as we may see in Wingate's *Maxims of Reason* (1658), no. 177. And it was judicially applied by Lord Chancellor Ellesmere¹ in 1610 and 1612. But it seems likely, that Ockham's most famous phrase in his own day was the: "Sufficiunt singularia, et ita tales *res universales* omnino frustra ponuntur": from which

¹ Coke's *Reports*: I., 8, 167 (Karl of Cumberland's case): and L, 9, 1K) (Sir O. Reynel's case). See also Coke's *hutuUt*, Part L (on Littleton) for the application of this maxim to lordal tenure.

he probably became known as the Singular Doctor. It must not, however, be supposed that Albertus Magnus was called the Universal Doctor, for a similar though opposite reason. He, like Aristotle and Francis Bacon, "took all knowledge to be his province".

3. Ueberweg indeed, whose *History of Philosophy* was first published in 1863 (ten years after the revised edition of Hamilton's *Discussions* in 1853), said in § 16 of his second volume (§ 104 of the English translation by Morris and Porter): "William of Occam founds his rejection of Realism on the principle; *Entia non sunt multiplicand*! prater necessitate*TM. He combats the realising and hypostatising of abstractions (*Sufficiunt Singularia, etc.*)" : p. 462 in the first volume of the English translation by Morris (1872), and § 36 on page 307 of the second, in the new German edition of 1898. No reference is given; and Ueberweg cannot always be trusted, even when he does give a reference. On the previous page (461) of § 104, he refers to the Scotist Petrus Aureolus (t 1322, Archbishop of Aix): *In SS.*, ii., D. 12, Q. 1, for an assertion that: "He (P. A.) enounced the principle subsequently known as the Law of Parsimony: *Non est Philosophicum, pluralitatem rerum ponere sine causa; jrusira enim fit per plura, quod fieri potest per pandora*". But there are no such clauses in the *locus* indicated; and the Index gives no clue to their presence anywhere else. It is indeed possible that he has written them somewhere; because the words had previously been used by his master Duns Scotus: a fact, with which Ueberweg does not seem to have been acquainted. Aureolus actually says (*In SS.*, i., D. 3, on p. 164 of vol. i.), referring to Aristotle's *Phisica* (i.): "In principiis debet tanta paucitas, quanta sufficit ad salvandum ea, quae sunt in natura necessaria".

4. My Note of April, 1915, asking for references to Ockham from readers of *MIND*, had the same fate as Prof. W. R. Sorley's inquiry in July, 1904 (p. 456), for the source of T. H. Green's fictitious quotation from Kant * (so long beloved of Oxford examiners): "Macht zwar der Verstand die Natur, aber er schafft sie nicht". There was no response; and, I venture to think, for the same reason. The earliest use of the popular phrase, which I had then lighted upon, occurs in an Inaugural Dissertation by Leibnitz in 1670: *De Stylo Philosophico Marii Nizolii*, § 28 (*De Secta Nominalium*). He does not, however, profess to quote, but says in *oratio obliqua*: "Generalis autem Regula est, qua Nominates passim utuntur, Entia non esse multiplicands praeter necessitatem". The words do not appear in the only philosophical work of Mario Nizzoli: *De veris principiis et vera ratione philosophandi*: published at Parma in 1553. Another edition was

published at Frankfurt in 1674, under the new title
Anli-barbarits Philosophicus;

¹" The Understanding makes Nature, but does not create" (the material out of which it Li made). See T. H. Green, *Prolegomena to Ethics*, § 11, first published in MIND of January, 1882, p. 9. It occur* also in his *Lectin* on Kant : Works*, vol. ii., p. 86 (j 74).

with the Dissertation by Leibnitz prefixed as an Introduction. In Hurter's *Nomenclator* (iii., 8), Nizolius is described as: "Philosophise scholastics acer aduersarius, Occami Nominalismi assecla". But he is better known through the many editions of his Ciceronian Concordance (*Thesaurus Ciceronis*).

5. I have since found in Clauberg's *Elementa Philosophic sen Ontosophia* (Groningen, 1647), part ii., § 169, p. 74: "Entia non sunt temere (sine necessitate) multiplicanda". And again on page 174 (part iii., § 121): in both cases without quotation-marks, or any reference to Nominalism, to Ockham, or to any source whatever. Possibly he regarded the phrase as a proverb, needing no sponsor. But I cannot find any such proverb in those vast collections of mediaeval and earlier phrases: the *Adagia* of Erasmus, and the *PolyanUies* of Mirabellius. The common formula is exactly given in Clauberg's *Logica Yetus et Nova* (1654), page 320, under Definition; but not as a quotation, nor with any reference.

tj. De Wulf in § 335 accuses Duns Scotus of: "creating fictitious, misleading, and superfluous beaconlights,—in defiance of a precept which he himself pretended to approve of: *entia non sunt vuttiplicanda prceter necessitate*TM". But he gives no reference, and I cannot find the formula anywhere in the text of the Subtle Doctor's writings. It appears substantially indeed in Wadding's edition (1639), torn, vii., p. 723 (27): but only in a new Franciscan Commentary on the *Opus Ox#n.*, iii., D. 34, Q. 1, Scholium 4. Wadding's chief collaborator, John Ponce of Cork, there mentions: "illud axioma vulgare, quo tam frequenter utuntur Scholastici; *nun sunt multiplicanda entia sine necessitate*". He does not, however, name any of these *Sciolastici*; and I can merely affirm (with almost mathematical certainty) that they do not include Ockham, Scotus, or Aquinas; and that the axiom does not occur in the two most popular textbooks of the Middle Ages, the *Sentences* of Peter Lombard (Bishop of Paris, + 1164), and the *Sum-mala Logicales* of Petrus Hispanus (t 1277, as Pope John XXI.). I may add, with sufficient moral certainty, Abelard, Hales, Albert, Bonaventura, and Durand. Ockham's disciples, Gabriel Biel of Tubingen (t 1495), and John Major of Haddington and St. Andrews (t 1540), each of whom has been called, "The Last of the Schoolmen," are satisfied with their Master's *Pluraitas* or *Fruttra fit*.¹ Reference may be made for the German, to his *In Sententias*, iii., D. 3, Q. 2, N. 4 (*Conclusio* 1), or (for applications) to i., D. 26, Q. 1, A. 1 (*Conclusio* 3). And for the Scot, to his *Logica* (1516), *Tractattu Primus Summularum*, folio 28, col. 4.

7. On the other hand, De Wulf might have said with

perfect accuracy, that Scotus, no less than Ockham, accepts and systematically applies the Law of Parcimony; whose origin he ascribes to Aristotle's *Physica* and *De Anima*, especially the first Book of

¹ Further, we may note, that there is no mention of the common formula (or any other) in the *Philosophia Nominalium Vindicate* of Jean Salabert, published at Paris so late as 166L

the former (cc. 5 and 7). Two (if not more) equivalent phrases are common to Ockham and Scotus: *Pluralitas, etc.*, and *Frustra fit, etc.*

(a) "Nunquam est ponenda pluralitas sine necessitate," appears in the Scotian Commentary *In Metaphysica* (Aristotelis): i., Q. 4, Scholium 3, p. 532 (10) of Wadding's torn. iv.

(b) "Pluralitas non est ponenda, nisi ubi est necessitas" : *Opus Oxon.*, i., D. 3, Q. 6, Scholium 5, p. 525 (12) of torn. v.

(c) "Ista opinio ponit pluralitatem sine necessitate, quod est contra doctrinam Philosophorum" : *Opus Oxon.*, iv., D. 1, QQ. 4 and 5, Scholium 3, p. 84 (7) of torn. viii.

(d) And in the next Scholium (4) he declares: "Sicut sequenti rationem naturalem, non sunt ponenda plura, nisi quae ratio naturalis concludit, ita sequenti fidem non sunt ponenda plura quam Veritas fidei requirat" : p. 90 (9) of torn. viii.

(«) A peculiar variant occurs on page 737 (4) of torn. iv.: *In Metaphysica*, viii., Q. 1, Scholium 2: "Positio plurium semper debet dicere necessitatem manifestam".

(l) "Frustra fit per plura, quod potest fieri per pauciora" : is found on page 30 (3) of torn. ii.: *In Physica* (Aristotelis), i., Q. 8.

(g) This is expanded into: "Generale enim principium est, quod si aliquid potest aequè bene fieri per pauciora, sicut per plura, nullo modo talis pluralitas debet poni": *De Rerum Principio*, Q. 1, art. 2, Scholium on page 92 (9) of torn. iii.

(h) Another peculiar Scotian variant is given in the *Reportata Parviensia*, ii., D. 15, Q. 1, Scholium 5, on page 348 of torn. xi.: "Paucitas est ponenda, ubi pluralitas non est necessaria".

8. The Metaphysical (or Methodological) Law of Parsimony (or Logical Frugality), indicated but not very distinctly expressed by Aristotle,¹ was fully and finally established, not by Ockham (t 1347), but by his teacher Duns Scotus (+ 1308): the greatest mind of the later Middle Ages, so unhappily cut off when he was only beginning to pass from the critical to the constructive stage. According to some biographers he died at thirty-four. Though un-intelligently described by Leibnitz and others as an Extreme Realist, his Universal was only an *Ens Rationis*; a Brain-tool having a merely metaphorical entity. "Ens (Reale seu Naturale) est concretum," he said in his *Tractatus de Modis Significandis*, i., c. 25 (12): page 58b in torn. i. "Ens est duplex, naturae et rationis. . . . Ens Rationis . . . cujusmodi sunt Genus, Species, Definitio" : in his *In Elenchorum LL.*, Q. 1, page 224 (2) in torn. L "Est enim Species tenuis similitudo Singularium" : in his *Super*

Universalis Porphyria, Q. 4, page 90 (4) in torn. i. The "Formalism" of the Most Subtle Doctor looks like the tentative and temporary device of a public teacher in Holy Orders ; who did not wish to break openly with the dominant tradition of Bealism ; but was feeling his way to the "Terminism," boldly professed by his independent contemporary Bishop Durand of Meaux (t 1332), and

¹ See end of Appendix.

afterwards completely worked out by his pupil William of Ockham. It has lately been stigmatized by the modern semi-Scotist, Professor Pohle of Breslfn, as: " an inconceivable hybrid, which. excludes every attempt of the mind to grasp it": p. 163 of *The Essence and Attribute* of God*: vol. i. of his *Dogmatic Theology*, translated by Arthur Preuss. Both the Oxford Franciscans (Ockham and Scot us) used indifferently the two formulas: " Pluralitas non est ponenda sine necessitate" : and, " Frustra fit per plura, quod potest fieri per pauciora"; while a formula very similar to the latter was used by the Most Resolute Doctor, the great Dominican Nominalist Durand: " Frustra autem ponuntur plura, ubi unum aufficit" : *In Sententias*, ii., D. 3, Q. 5, N. 4. Occam's main contribution to the Doctrine was a special application to the Logic of Universale, in his characteristic formula: " Sufficiunt Singularia, et ita tales *res universale** omnino frustra ponuntur " : *In SS.*, i., D. 2, Q. 4 (top of col. 18). Few or no competent critics will question Mansel's judgment of Ockham, on page 40 of his Introduction to the *Rudi-menta* of Aldrich : " The ablest writer on Logic whom the Schools have produced. . . . The *Summa Totius Logica* of Occam is the most valuable contribution of the Middle Ages to the *Logica Docens** His editor, Mark of Beneventum, said that, if the Gods used Logic, it would be the Logic of Occam."

9. The doctrine was first completely applied to Physics by Sir Isaac Newton in 1713. He quotes the very words of Scotus and. Ockham in the brief annotation of his first *Begitla Philosophandi* :¹ which is itself a very similar statement of the principle. In the Third Edition (1726) of the *Principia Mathematica* (De Mundi Systemate, lib. iii., p. 387, the Rule runs: " Causas rerum naturalium non plures admitti debere, quam quae et verse aint et earum phenomenis explicandis sufnciant". Newton then subjoins: " Dicunt utique philosophi: Natura nihil agit frustra, et frustra fit per plura quod fieri potest per pauciora " : a comment not found in the First Edition (1687). There is, however, no mention of Ockham or Nominalism in the *Principia*. The term *Novaculum Nominalium* was quite unknown in the seventeenth century. It came into vogue in the middle of the eighteenth century, as the international learned translation of Condillac's flash of Oallio wit: *Ratoir des Nominaux*, in a note on page 214 of his *Origine des Connaissances Humaines* (1746): Section V. (Des Abstractions), chap, i., § 5. The English variant (Occam's Razor) is a century younger; having made its first appearance in

¹ *Rtgyla* L (in the Third and last of the author's editions),

corresponds with *Hypoth.* I. on p. 402 of the First Edition (1087). The change of name from *Hypothesis* to *Rtgula*, and the words " Dicunt eta.," prefixed to the original comment: " Nature enim simplex est et rerum causis super-flais non laxariat" : first appeared on p. 367 of the Second Editioa (1713). In the First, the paging leaps from 383 to 400 : 380 than becoming 402.

Sir William Hamilton's *Discussions* (1852), page 590 (On Causality). In the second edition (1853) it is used on pages 616 and 629. In the latter place it is for the first time distinctly associated with the current form.

10. The following Conclusions I call Provisional, mainly because there is still a possibility that they may be upset by German investigators of Ockham's unpublished manuscripts. These have lain idle for nearly six centuries at Ingolstadt or Munich; still uncopied, and probably unread, by any Englishman; much to the discredit of Merton College and the University of Oxford. Many of his cardinal works have never been printed : including his Commentaries on the Second, Third, and Fourth Books of the Lombard Sentences. The Commentary on the First Book (printed in 1495) is very full; but the appended comments on the other Books are only slender bundles of selected Questions, occupying together only one-third of the volume.

PROVISIONAL CONCLUSIONS.

A. "Occam's Eazor" is a modern myth. There is nothing mediffival in it, except the general sense of the post-mediaeval formula: *Entia iwn sunt multiplicanda prater necessitatem*.

This myth has come to full maturity and secured general assent, within the lifetime of many philosophers of the present day; though it is a matter of purely intellectual interest, without any impulse or reinforcement from commercial greed, family-pride, national vanity, sectarian zeal, or political party-spirit.

B. The age of the English title is not yet threescore years and ten: dating from the publication of Sir William Hamilton's *Discussions* (1852).

C. The Latin title, *Novaculnm Nominalium*, is little (if at all) more than a century older: being a translation of the French title, *Rasoir des Nominam*, bestowed upon the current formula by Condillac in 1746.

D. (1) The current formula was unknown to Ockham and the other Schoolmen.

(2) It was invented in 1639, substantially in its present wording, by the Scotist Commentator, John Ponce of Cork: a little-known man of great abilities and very independent disposition.

(3) It first appeared in its present exact order of words, in the *Logica Vetns et Nova* of John Clauberg of Groningen in 1654.

(4) It was first formally associated with Nominalism by Leibnitz in 1670; and this connexion seems to have been generally accepted from the beginning of the eighteenth century. The reason of the connexion was indicated in 1676, by Jakob Thomas-ins (father of the celebrated jurispudent Christian T.), in his Oration *De Doctoribus ScJwlasticis Latinis* to the University of Leipzig: " Hoc principium: Non esse absque necessitate multi-plicanda entia. Hinc enim ipsi (Nominates) Bealibus ut prodigis

rerum multiplicioribus invidiam fecerunt, suam vero philosophiam frugalitatis nomine extulerunt. Reales vicissim qui principium illud, mirum entium avaritiam quam tamen natura non amet, in Scholas importasse, simulque ; multas interemisse veritates dictarent, Nominalibus avaritiam probri loco objecerunt." It is possible that Leibnitz, who was only twenty-four in 1670, may have got the notion of connecting Parcimony (or Logical Frugality) with Nominalism, from some earlier expression of opinion by the elder Thomasius.¹ Some of the very words of Thomasius appear in Morhofs *Polyhistor* (1688), Tom. II. (1), c. 13, p. 75: which is followed in Brucker's *History of Philosophy* (1766). Tom. III., p. 904, § 27.

(5) Still, even then, nobody connected Ockham in particular, with the newly-accepted Scotist-Nominal formula. That connexion may be dated apparently from 1812 ; when Tennemann in his *Grundriss der Geschichte der Philosophie* (§ 271), wrote of Ockham as following the Rule: *Entia non sunt multiplicanda propter necessitatem* : without expressly ascribing to him the actual use of the very words. They had not been mentioned in his previous larger History (1810), which had quoted " Frustra fit" in a note on page 851 of band viii. Tennemann's loose anachronistic use of the post-medieval formula seems to have misled Ueberweg; and had previously caused misunderstanding in Britain. His Manual had been translated in 1832 by Rev. Arthur Johnson, from the posthumous edition of 1829 as revised by Wendt. Hamilton never noticed the anachronism, though he reviewed Johnson's translation very severely in the *Edinburgh Review* of October, 1832. He indeed tacitly adopted it in 1853, after inventing the label *Occam's Razor*. That label was at first (in 1852) applied by him to the Law of Parcimony in general. Hamilton, moreover, seems to have previously devised that very title, Parcimony, in place of the older Frugality. So far as I can find, it first appeared in his edition of Reid's *Works* (1846), in a note to Reid's *First Essay on the Intellectual Powers* (chap, iii., p. 236), and in his Supplementary Note A, § 2, p. 751.

¹ Thomasius says obscurely of "Entia non etc." (*toe. cit.*): "Quod a Ferrariensibus ducimus, frequentissime Nominales usurpasse ". But I cannot find any mention of collaborate Ferrarienses (like the Salmanti-censea and Couimbricensea) in any work of reference. Brucker (*Hist. Phil.* III., 866) classifies Hieronymus Fontanus (or Fontanus) de Ferraris O.P. (t 1632) as a *Nominalis*, but this Grand Inquisitor's *Reper-torium Feuti* (or *Loci*

Communes) contain-; no allusion to the Law of Parcimony in any form. Franciscus Sylvester Ferrariensis O P. (t 1526) cites " Frustra fit etc." (in substance), And ascribes its origin to Aristotle, in his Questions on the *Physicn* : I., Q. 9, p. 35b. He says there : " Quod potest fieri per pauciora, superfluum est, si fist per plura " : and (a tew lines lower), "Natura non agit j»r plura, quod fieri per pauciora potest ". The latter seems to be borrowed from Averroes : *Comment, de Phvxieo Audiuu* (Aristotelis). N. 50, on p. 316 of the Latin translation by Jacob Mmntinu* (Venice, 1574). See also NN. 40 (27c) and 41 (26a).

The unfortunate carelessness of Tennemann and Hamilton has engendered a very serious philosophic corruption. For, it has turned a sound rule of Methodology into a Metaphysical dogma. As J. S. Mill pointed out in his *Examination of Hamilton* (ch. 24, p. 542 in 4th edition): "The *Law of Parsimony* ... is a purely logical precept". It is folly, to complicate research by multiplying the objects of inquiry; but we know too little of the ultimate constitution of the Universe, to assume that it cannot be far more complex than it seems, or than we have any actual reason to suppose. The value of this warning has just now received signal illustration from the very recent discovery of Chemical *Isotopes*, -which has proved (*e.g.*), that what had previously been simply called "lead" is infinitely complex in its composition.¹ This discovery ought to operate as a salutary check upon dogmatism, and the tendency to turn logical rules into ontological principles.

APPENDIX.

Some readers of MIND, and other students of Philosophy, to-whom the rare works of Ockham are not readily accessible, may be glad to have the following list of seventeen relevant quotations at hand for ready reference:—

A. "Pluralitas non est ponenda sine necessitate." (1) In *Sentential* (Petri Lombardi), lib. i., *Distinctio* i., QQ. 1 and 2.

2) *In SS.*, i., D. 7, Q. 2. (3) *Quodlibeta*, i., Q. 3. (4) Do., iii., Q. 2. 5) Do., iv., Q. 15. (6) Do., v., Q. 5 (lines 3 and 4).

B. "Non est ponenda pluralitas sine necessitate." *In SS.* ii., Q. 15 (second column): Utrum Angelus superior intelligat per pauciores species quam inferior?

C. "Nunquam ponenda est pluralitas sine necessitate." *In SS.*, i., D. 27, Q. 2 (section K, not J as given by Prantl in his Note 758). The matter discussed is *Species Intelligibilis*.

D. "Talis species (intelligibilis) non est ponenda propter superfluitatem." *Expositio Aurea: Perierm., Proem.* See Prantl, N. 757.

E. "Si due res sufficient ad ejus veritatem, saperfluum est ponere aliam (tertiam) rem": (1) *Quodlibeta*, iv., Q. 19; (Prantl, N. 768). (2) Do., iv., Q. 24; (Haureau, ii., 459).

F. " Sufficiunt eingnlaria, et ita tales *res nniversales*
ouinino
frustra ponuntur." *In SS.*, i., D. 2, Q. 4 (top of column
18).

G. " Frustra fit per plum, quod potest fieri per
pauoiora."

(1) *Summa Tot. Log., Pars, i.*, cap. 12, f. 6, r. A.:
referring to-

Intentio prima and secunda.

(2) *In SS.*, L, D. 31, Q. 1 (middle of first column):

Utrum Identi-

tas, Similitudo, it Equalitas in divinis tint

relatione rtales T*

(3) *In SS.*, ii., Q. 15, sections 0 and Q: referring to
Species In-

teUigibilis.

' Cf. Prof. F. Soddy in *Nat%on*, New. 2490 and 2491
(1917,12th and 19th. June).

4) *Philosophia Naturalis (Summa in Physicorum LL.)*, *Quarta Pars*, cap. 1, p. 86b of the Roman edition (1637). In this he denies the reality of an Instant of Time ; showing some anticipation of the (New Herakleitean) doctrines associated with the names of Bergson and William James. See also page 85a (at the top). Ockham's doctrine of the *Continuum* (in regard to Space), as it appears in his *Quodlibete*, I., Q. 9: *Utrum linea componatur ex punctis* : has been set out and discussed by Mr. Delisle Burns in *MIND* of October, 1916 (pp. 506 ff.) 5) *De Sacramento Altaris*, Q. 3 (*Utrum corpus quod est quantitas sit res absolute, distincta realiter a substantia*), page 41 of the Paris (Blackletter) edition of 1513. I am indebted for this last reference to Mr. C. Delisle Burns, in *MIND*, October, 1915. Mr. Burns has shown the philosophical incongruity, and consequent improbability of the commonly assumed use of "*Entia, etc.*," by Ockham. See also page 45. And compare with Scotus on the same subject (Quantity): *In Physica*, i., Q. 8 : torn, ii., p. 30 (3). Refer to S 7 (f.) *supra*. Aristotle's nearest approximations to the doctrine developed by Scotus will be found in cc. 4, 6, and 7 of the First Book of the *Physica*. " *Beltion de elattd kai peperasmena labein, hoper poiei Empedokles : (Praestat autem pauciora et finita principia sumere : quod quidem facit Empedocles)*" : cap. 4, p. 188a, lines 17-18 (Bekker). See also c. 6 ; p. 189a, lines 12-13, 20, 26-27 ; and p. 189b, lines 18-19. Likewise c. 7; p. 190b, lines 35-36 ; and p. 191a, lines 6-7.

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