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## MEDICAL PALEOGRAPHY.

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of Philadelphia.

MEDICINE is a forward-looking, not a backward-looking science, and hence the study of the origins and evolution of our guild and of its beliefs and customs are little thought of by our earnest members. Our indifference to the history of medicine was curiously and strikingly brought home to me recently, when I began hunting for data concerning the embryology of the signs used every day by physicians in prescription-writing. I discovered that as the peasant does not know what his "bow and scrape" mean, evolutionally-speaking,<sup>1</sup> and as the young mother does not understand why she dresses her infant in a skirt two or three feet longer than the baby itself,<sup>2</sup> so the physician has no suspicion of the origins of the signs used every day for drams, ounces, scruples, etc. After consulting two or three dozen cyclopedias, dictionaries, and technical handbooks, I found that nobody knew, and that these signs are written in the United States a million or several million times every day, and by highly educated men without the slightest suspicion or comprehension of their history.<sup>3</sup>

Their origin can be understood only by a general comprehension of the principal facts of the history of punctuation and of general paleography. As to general paleography, the best encyclopedias contain epitomes of the subject which need not be reproduced here, except, perhaps, to mention the roles played, (1) by the expensiveness of material upon

<sup>1</sup> Spencer explains them as the initial movements of the captive, throwing himself under the conqueror's feet.

<sup>2</sup> The mother's skirt used for the newcomer, until this became a universal custom.

<sup>3</sup> I thought I should find the revelation of the mystery in a book I stumbled upon on medical symbolism, but it does not even mention the existence of the mysteries with which I was concerned.



which medieval writing was done. Whether upon leaf, wood, bark, vellum, or other material, there was a dire necessity for economy that resulted in small writing, narrow spaces, and many contractions. (2) To this necessity was added the constantly acting factor of human laziness, which by a thousand devices tried to shorten hours and lessen work by such labor-saving things as abbreviations and signs. (3) As everything biologic has its life-history of ambitious and plastic youth, adult strength, weakening old age and death, so do all styles and systems of handwriting. The development and decay of majuscule, minuscule, uncial, cursive, and calligraphic handwritings is of abundant interest psychologically as well as paleographically. The increasing carelessness by the fourteenth century finally led to such a degradation that many of these contractions inaccurately applied became the excuse for meaningless flourishes.

As a consequence we find these three factors working together most powerfully as the middle ages advanced toward the age of printing, to produce a vast and ludicrously complicated system of contractions, abbreviations and signs the object of which was to spare writers labor, and bookbuyers expense. It has been calculated that in the French MSS. there were as many as 5,000 distinct kinds of these artificial contractions. In England the number did not rise above 1,000—though even this is no warrant for great congratulation except when viewed relatively. The nature and methods of making these contractions, abbreviations and signs will become clearer as we proceed, but it is only study of the reproductions or of the originals of medieval books and MSS. that will make the matter plain. A careful comparison of the forms of our own printed capital letters as modified in the small or "lower case" letters, and then as further transformed in the cursive or script style, will give one a glimpse into the agencies of change made necessary first by the reduction in size, and second by the desire in writing to avoid taking the pen from the paper in making a new letter. That this last object is still a factor in chirography is shown in almost all writings; for example by the frequent failure to dot



the letter i, and either by noncrossing the t, or doing so by long loops and swirls.

PUNCTUATION, properly speaking, began about the eighth century A.D., but was not fixed until after the invention of printing. Points of various kinds were used after each word so far back as the oldest inscriptions. These dots were sometimes single, sometimes double or triple (in the form of a triangle) or quadruple (in the form of a square, though also occasionally placed in the form of a circle, diamond, etc., etc.). But the object was to separate words, not parts or entire sentences, and hence it was not punctuation. One author, Aristophanes of Byzantium, in the second century B.C., used a dot at the top of the end of a complete sentence; for an incomplete sentence, corresponding to our own semicolon or colon, he placed the point as we place our period; corresponding to our comma he placed the dot at the middle of the space. The example of Aristophanes, however, was little followed—a commentary upon the intelligence and conservatism of the copyists—and most of the manuscripts of the middle ages are poorly or not at all punctuated. In Caxton's Mallory's *Le morte d'arthur* the sole punctuation sign is a slanting line, and an occasional reversed capital D, or paragraph sign.

THE ORIGIN OF MODERN PUNCTUATION MARKS is strangely omitted in the treatises and cyclopedias. Only in the last edition of Chambers have I been able to find anything approximating an explanation of, or even suggesting, their evolution. It thus transpires that students of evolution, history, and embryology, while spending their lives in studying the origin of worlds or organisms, are indifferent to the origins of the letters, punctuation marks, signs, and symbols they make use of, every time pen is placed on paper. The fact seems to be that our modern punctuation marks are the conventionalized relics of some of the most used contractions of the medieval copyists. With the increasing demand for books, as I have before said, the necessity of lessening the cost of material and of labor, united with laziness to develop crowded writing and the tremendous system of contractions.



The signs of some of these contractions finally developed into our modern punctuation marks. Just as every letter of the alphabet is the conventionalized simplification of the picture of an object, so the period,

<i>Abstrahere</i> .....	$\bar{\Lambda}$	<i>To Abstract</i>
<i>Acetum</i> .....	$\ddagger \ddagger$	<i>Vinegar</i>
<i>Distillatum</i> .....	$\times \times$	<i>Distilled Vinegar</i>
<i>Acida</i> .....	$\ddagger ; > ; \curvearrowright$	<i>Acid in general</i>
<i>Vitriol</i> .....	$\otimes ; \otimes ; > \otimes$	<i>Acid of Vitriol</i>
<i>Marin</i> .....	$\otimes ; > \otimes ; > \otimes$	<i>Marine Acid</i>
<i>Nitr</i> .....	$\otimes ; \otimes ; > \otimes$	<i>Nitrous Acid</i>
<i>Vegetal</i> .....	$\ddagger$	<i>Vegetable Acid</i>
<i>Vol. Sulph</i> .....	$\ddagger$	<i>Volatile Sulphurous Acid</i>
<i>Phosph</i> .....	$\ddagger$	<i>Phosphoric Acid</i>
<i>Addere</i> .....	<i>ad</i>	<i>Add</i>
<i>Aer</i> .....	$\Delta ; \Delta ; \Delta$	<i>Air</i>
<i>Fix</i> .....	$\Delta ; f \Delta$	<i>Fixed Air</i>
<i>Meph</i> .....	<i>m. \Delta</i>	<i>Mephitic Air</i>
<i>Ærugo</i> .....	$\oplus$	<i>Verdigrise</i>
<i>Distill</i> .....	$\oplus dd$	<i>Distilled Verdigrise</i>
<i>Æs</i> .....	$\text{♀}$	<i>Copper, or Brass</i>
<i>Ustum</i> .....	$\text{♀}$	<i>Burnt Brass</i>
<i>Æther</i> .....	$\text{Æ} ; \text{A}$	<i>Ether</i>
<i>Athenum</i> .....	$\text{☪}$	<i>A Kettle</i>
<i>Albumen</i> .....	$\text{⊙} ; \text{E}$	<i>White of Egg</i>
<i>Alcahest, or Alcohol Vini</i> .....	$\text{VA}$	<i>Alcohol of Wine</i>
<i>Alkali</i> .....	$\text{☪} ; \text{R}$	
<i>Fix</i> .....	$\text{⊖} ; \text{⊖} ; \text{⊖}$	<i>Fixed Alkali</i>
<i>Vol</i> .....	$\text{⊖} ; \text{⊖} ; \text{⊖}$	<i>Volatile Alkali</i>
<i>Mit. Fix</i> .....	<i>m. ⊖</i>	<i>Milder Fixed Alkali</i>
<i>Caust. Fix</i> .....	<i>c. ⊖</i>	<i>Caustic Fixed Alkali</i>
<i>Mit. Vol</i> .....	<i>m. ⊖</i>	<i>Milder Volatile Alkali</i>
<i>Caust. Vol</i> .....	<i>c. ⊖</i>	<i>Caustic Volatile Alkali</i>

FIG. 1.

comma, semicolon, etc., etc., are similar remains of pictures of omitted syllables and letters. This may be illustrated as follows:



THE LIGATURE, DIERESIS, UMLAUT, CIRCUMFLEX, ETC.—The horizontal line above was an early sign of omission of letters, as *e. g.*, *c* for *cum*, *āūt* for *autem*, *ā* for *annos*, etc. It probably arose from an earlier custom of the scribes of placing such a line above an erroneous letter, syllable, or words, to be erased later. To avoid the writing of the second one of a double letter, this line was drawn over the first, and the second was omitted—*e. g.*, *sumā* for *summa*, etc. The line in case of *m* first, and then of *n*, was but a rapid and cursive way of making the uncial *m* or *n* above the preceding letter; at first it was a waving line, our circumflex<sup>4</sup>, and then it became straight as a typical sign. This line was also used as a ligature of *æ* and *œ*, at present still used, and which was a mere picture of the linking or binding of the two letters. We still use the line above vowels to indicate their long sound, the modern significance not being essentially different from that of the elder. At a later date the scribes also used the line, which is only a hastily-written ligature, or letter *m*, over the last letter of many contracted words, *e. g.*, *qm̄* for *quoniam*, *qūō* for *quomodo* (or *quoniam*), etc. The two dots of the dieresis and umlaut, which were but hurried and habitually-shortened ligatures, finally came to denote the separate pronunciation of the shortened and contracted syllables, in which a letter or syllable (as in zoölogy, coöperation, etc.) was omitted. In our medical sign, *āā*, the omitted *n* is indicated by the straight lines above.

THE PERIOD AND THE COLON.—The Latin scribes had a large number of words to copy, ending in *-mus* and *-nus*. To save labor and space, they began the contraction-process by writing these terminals thus: *m̄s*, *n̄s*, in which the *u* was half made and crossed with the long *s*, or *f*. It was not long, of course, before the last trace of the *u* disappeared, and the long *f* was reduced to the two dots of its head and tail, that is, our colon, so that *m :* stood for *-mus*, *b :* for *bus*, etc. It was at last seen that the upper dot was useless, and its omission left us

<sup>4</sup> The circumflex, or straight line, was not always written horizontally. For instance, *suoy* was the contraction for *suorum*, in which *ſ* represented the letter *r*, and *u*, crossed by cursive *m*, passed through the *˘*, or circumflex and straight line to the vertical line.



our modern period, which finally was limited to indicate the completed sentence. It is interesting to observe the incompleted sentence is still indicated by the

<i>Alombicus</i> .....	XX;XX;	<i>An Alombic.</i>
<i>Alumen</i> .....	O; ☐	<i>Alum.</i>
<i>— Plum</i> .....	OP	<i>Plumous Alum.</i>
<i>— Ust</i> .....	☉	<i>Burnt Alum.</i>
<i>Amalgama</i> .....	taa; ▲	<i>Amalgam.</i>
<i>Amphora</i> .....	~~~~~	<i>A Vessel of 9 Gallons.</i>
<i>Ampulla</i> .....	~~~~~	<i>A Bottle.</i>
<i>Ana</i> .....	āā	<i>Of each.</i>
<i>Annus</i> .....	☽	<i>The Year.</i>
<i>Antimonium</i> .....	♂	<i>Antimony.</i>
<i>Aqua</i> .....	▽	<i>Water.</i>
<i>— Calcis</i> .....	▽	<i>Lime Water.</i>
<i>— Fortis</i> .....	A; ▽ ▽	
<i>— Pluvialis</i> .....	▽ Pl	<i>Rain Water.</i>
<i>— Font</i> .....	▽	<i>Spring Water.</i>
<i>— Regia</i> .....	R; R	
<i>— Rosar</i> .....	▽ Rosa;	<i>Rose Water.</i>
<i>— Salis Nitri</i> .....	☐	<i>Mother Water of Nitre.</i>
<i>— Vitae</i> .....	▽	<i>Brandy.</i>
<i>Arcitenens</i> .....	♂	<i>Sagittarius, A Celestial Sign.</i>
<i>Arena</i> .....	•••••	<i>Sand.</i>
<i>Argentum</i> .....	☽; ▲	<i>Silver.</i>
<i>— Limatum</i> .....	☽	<i>Filings of Silver.</i>
<i>— Vivum</i> .....	♀	<i>Quicksilver.</i>
<i>Argilla</i> .....	☽	<i>Clay.</i>
<i>Aries</i> .....	▽	<i>The Ram, A Constellation.</i>
<i>Arsenicum</i> .....	☽	<i>Arsenic.</i>
<i>— Regul</i> .....	☽	<i>Regulus of Arsenic.</i>
<i>Auripigmentum</i> .....	☽; ☽	<i>Auripigment.</i>

FIG. 2.

colon, which is also the half-way stage of the development of the ♀ into the period.



THE SEMICOLON is what remains to us of the elision of *-ue* and *-et* at the end of many Latin words. It was

<i>Aurum</i> .....	☉	Gold.
<i>Foliat</i> .....	☐	Leaf Gold.
<i>Limat</i> .....	☉f	Filings of Gold.
<i>Potabile</i> .....	☉P	
<i>Balneum</i> .....	B	A Bath.
<i>Mariae</i> .....	BM; MB	A Water Bath.
<i>Vaporis</i> .....	VB	A Vapour Bath.
<i>Arena</i> .....	AB; BA	A Sand Bath.
<i>Bismuthum</i> .....	BW	Bismuth.
<i>Borax</i> .....	⚞; ⚟; ⚠	
<i>Caementare</i> .....	⌒	To Cement.
<i>Calcinare</i> .....	☿	To Calcine.
<i>Calx</i> .....	C	Lime.
<i>Uiva</i> .....	⚹; ⚺; ⚻	Quick Lime.
<i>Camphora</i> .....	⚷yr	Camphor.
<i>Cancer</i> .....	♋	The Crab. <small>(The Fish, or the Constellation.)</small>
<i>Capiatur</i> .....	cap.	Taken.
<i>Caput Mortuum</i> .....	☠; ☪	
<i>Cera</i> .....	⚞; ⚟; ⚠	Wax.
<i>Cerussa</i> .....	⚞	White Lead.
<i>Cineres</i> .....	☐; E	Ashes.
<i>Clavellata</i> .....	⚹; ⚺	Pot. Ash.
<i>Cinnabaris</i> .....	⚞; ⚟; ⚠	Cinnabar.
<i>Coagulare</i> .....	HE	To Coagulate.
<i>Cobalt</i> .....	K	Cobalt.
<i>Congium</i> .....	cong.	A Gallon.
<i>Cornu Cervi</i> .....	C.C.	Harts Horn.
<i>Cornu Calcin</i> .....	C.C.C.	Calcined harts horn.
<i>Ust</i> .....	C.C.U.	Burnt harts horn.

FIG. 3.

originally written thus, ; or with the comma reversed, in which the reversed comma is the hurried and con-



ventionalized form of *u* and the dot above is that of *e*. This form of the reversed comma was finally replaced by the form as we now have it, which was derived from the suppressed ending *-et*, of many Latin words, the excised letters being indicated, *e.g.*, in this way: *hab*; for *habet*, in which the dot is the relic of the *e*, and the comma is the trace of the *t*. For a long time this semicolon was confined by the scribes to words ending in *ue*, or *et*, as, *e.g.*, *qu*; for *quandoque*, *quo*; for *quoque*, *a*; for *apparet*, *o*; for *oportet*, *l*; for *licet*, *t*; for *tenet*, *h*; for *habet*, *s*; for *scilicet*, etc. It was afterwards generalized to signify the omission of any final syllable, and when printing came into existence and the whole huge clumsy system of contractions was done away with, the semicolon was given its present function.

THE ZODIACAL SIGNS illustrate the conventionalizing of pictures. They are thus explained by Taylor:

☿ The caduceus of *Mercury* entwined by two serpents.

♀ The mirror of *Venus*, with its handle.

♂ The shield and spear of *Mars*.

♃ The arm of *Jupiter* grasping the thunderbolt.

♄ The mower's scythe of *Saturn*.

♈ The curved horns of the ram, *Aries*.

♉ The head and horns of *Taurus*, the bull.

♐ The arrow and a portion of the bow of *Sagittarius*.

♑ The circle is the head of the goat, the forelegs are below, the body and tail are to the left. The sign of *Capricornus*.

THE DIGITS, as the name implies, are mere pictures of the fingers. I is the first finger; II, III, IIII, respectively the second, third, and fourth fingers. V is the fork of the hand, IV and VI with I subtracted or added. VV (or X) represents the two forks or the crossed thumbs. In the Orient, reckoning by means of the positions and arrangements of the fingers is carried on as high as to 10,000. Our denary system is itself due to the fact of counting by means of our *ten* fingers. Our so-called Arabic numerals are not of Arabic origin, but came from India to Bagdad



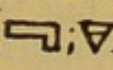











Corpora Metallica	C.M	Metallic Bodies.
Creta		Chalk.
Crocus		Saffron.
— Veneris		Saffron of Copper.
Crucibulum	$+; \nabla; +$ <sup>ble</sup>	A Crucible.
Crystallus		Crystal.
Cucurbita	$\Delta; \odot$	A Cucurbit.
Cuprum		Copper.
Cyathus	Cyath.	A Glassfull.
Cochleara	Cochl.	A Spoonfull.
Distillare	$\lambda; \delta; d; \delta; \alpha; \infty$	To Distill.
Dies	$\circ; \delta$	A Day.
— Lunae		Monday.
— Martis		Tuesday.
— Mercurii	$\gamma; \delta$	Wednesday.
— Jovis	$4; 4$	Thursday.
— Veneris		Friday.
— Saturni	$\cap$	Saturday.
— Solis		Sunday.
Digere	$\overline{8}$	Digest.
Drachma	3	A Dram.
Essentia	Ess; $\ddagger$	Essence.
Faeces Vini	$\times$	Lies of Wine.
Farina		Meal.
— Laterum		Brick dust.
Ferrum		Iron.
— Limat.	$\alpha; \delta$	Filings of Iron.
Filtrare	33	To Filter.
Fluere	$\approx$	To Flow.

FIG. 4.



about the eighth century, and were fixed and uniform by the fourteenth century. There is some doubt as to the origin of the forms, but the same principles of contraction and conventionalization probably hold here as in other signs.

MISCELLANEOUS.—Several mathematic signs also illustrate the methods by which contractions are conventionalized. In many large commercial signboards the & of *Brown & Co.* will show plainly the original Latin conjunction *Et*, the *t* being somewhat shortened. The steps by which the sign +, or *plus*, came from *et*, are shown by the series :

ET. EJ, & & & & & & +

In the Domesday Book *et* was made thus, 7, and older forms were 7, 7, etc.

THE COMMA.—The professional writers had a special sign for the omission of the final syllable *-us*, so common in Latin. In the earliest MSS. this was made thus, 7, in which is still plainly visible the concavity of the *u*, and the long *s* tailed to it. In writing this hastily, the open concavity became closed, resulting in the sign, 9. Thus, *ei9* stood for *ejus*, *omni79* for *omnibus*, etc. This sign is so similar to our comma, that the suggestion seems irresistible that our comma was adapted from this conventionalized 9 or 9. This sign was also used for *-er*, as *e.g.*, in the sign for *cancer*, in the table appended. It is possible that our comma may have arisen by cutting off the upper part of the semicolon, as our period came from leaving off the upper part of the colon, but the first suggestion seems the more probable.

THE APOSTROPHE was at first a small letter, the cursive *r*, written above the space or previous letter, to denote the omission of *r*, or a syllable with *r* in it, such as *er*, or *re*. The slovenliness of the writers is exhibited in the fact that they did not take the pen from paper to make the apostrophe, but made a scrawling line up to the sign, and again back to the next letter in order. That the semicolon was sometimes used to indicate the omission of *er*, is shown in the words, *aer*, *æther*, etc., of the old table reproduced.

Just as the circumflex accent, derived originally



from the letter *m*, passed into a wave-line, and then into a horizontal bar, so the initial letter *m* of the

<i>Fuligo</i> .....		Soot.
<i>Fumus</i> .....		Smoke.
<i>Fluor, vel Terrae Fusib:</i>		Fluor, or Fusible Earths.
<i>Granum</i> .....	gr	A grain weight.
<i>Gummi</i> .....		Gum.
<i>Gutta</i> .....	G; gt; gut.	A drop.
<i>Gypsum</i> .....		Plaster.
<i>Flora</i> .....		An Flour.
<i>Hepar Sulph:</i> .....		Liver of Sulphur.
<i>Ignis</i> .....		Fire.
<i>Reverb.</i> .....	$\Delta R$	Reverberating heat.
<i>Rotae</i> .....		Circular Fire.
<i>Jovis, vel Jupiter</i> .....	$\text{J}$	Tin.
<i>Lap. Calamin:</i> .....	LC; lc	Calamine Stone.
<i>Haematitis</i> .....		Blood Stone.
<i>Lazuli</i> .....		
<i>Libra</i> .....	P; tt	A pound.
<i>Coclostis</i> .....		The sign in the Zodiac.
<i>Lithargyrus</i> .....		Litharge.
<i>Luna</i> .....		Silver.
<i>Lutare</i> .....		To pute.
<i>Lutum Hermetis</i> .....	L; Herm:	Lute of Hermes.
<i>Magnes</i> .....		Load Stone.
<i>Magnesia</i> .....	MV; M	
<i>Manipulus</i> .....	M	A handfull.
<i>Marcasita</i> .....		Marcasite.
<i>Massa</i> .....		A Mass (as for pills).
<i>Materia</i> .....	aa	Matter.
<i>Prima</i> .....	MP	The first matter.

FIG. 5.

word *minus* became such a bar, and is called by us *minus*.

It seems probable that the sign  $\div$  (divided by)



was taken (with no very logical nexus) from the contraction of the medieval scribes for *est*, in which the dot above the line represented the *e*, and that below

Mel.	⌘	Honey.
Month.	☾	A Month.
Mercurius.	☿	Quicksilver.
— Praecip.	☿ ☐	Precipitated Mercury.
— Sublim.	☿ ☐	Sublimed Mercury.
Metall. Subst.	S M	Metallic Substance.
Misce.	m	Mix.
Nickel.	N	Nickel.
Nitrum.	Ⓢ	Nitre.
Nox.	♂; ♀	Night.
Oilum.	Ⓢ; Ⓢ; Ⓢ; Ⓢ; Ⓢ; Ⓢ	Oil.
— Fix.	☿	Fixed Oils.
— Esent.	E Ⓢ; Ⓢ	Essential Oils.
— Olivarum.	Ⓢ	Olive Oil.
Oppositio.	♂	Opposition.
Orichalcum.	Ⓢ	Brass.
Phlegma.	♀; ♂	Phlegm.
Phlogiston.	Ⓢ	
Phosphorus.	Ⓢ	
Pisces.	♈	The sign of the Zodiac.
Plumbum.	♄	Lead.
Praecipitatum.	☐	Precipitate.
Pugillus.	P	A Pugil.
Pulvis.	Ⓢ; Ⓢ	Powder.
Pumex.	Lc	Pumice stone.
Purificare.	☿	To purify.
Purificare.	+ →	To putrify.
Præpar.	PP; pp.	To prepare.
Phiala.	Ⓢ	A Phial.
Partes Aequales.	P E; p: aeq.	Equal parts.

FIG. 6.

the *t*, while the long *f*, made horizontal, was straightened into a dash.



*Esse* was at first written in this way:  $\approx$ , in which two dots represent each an *e*, and the two wave-lines each a long *s*. This became  $\equiv$  by straightening the curving *s* lines, and finally the two dots were eliminated, leaving our sign  $=$ , *equal to*. Other similar forms were  $=s$  for *esses*,  $=t$  for *esset*, and  $=m9$  for *essemus*.

In  $\text{lb}$ , for *libra*, pounds, the horizontal line, denoting a contraction or omission, is made across the *l*, and in  $\text{£}$ , the two bars denote the double omission. The letter *s*, for shillings (*solidi*), formerly had a bar over it,  $\bar{s}$ , and the *d* of pence (*denarii*), had its cross,  $\bar{d}$ , both now economically omitted.

THE "DOTTING" OF DIGITS, I, and J, AND THE "TAILING" OF THE J, ETC.—With the compression of writing, confusion would arise, the letter *i* not being easily distinguishable from the upright strokes of other letters. To prevent this the *i*'s were dotted. The dotting of the digits in prescriptions is probably due to the same necessity of avoiding mistakes, and was made doubly emphatic by counting aloud as the digits were dotted. The force of conservatism is shown by the continuance of the habit of dotting the *J*, when the tailing of the *I* made it into a *J*. Although by this tailing the dot became unnecessary the dotting was kept up. I suppose the tailing of the last of more than one digit in prescriptions was due to the natural desire of a "flourish" at the end of a word, combined with the distinction and clearness gained by thus differentiating the last figure of a number.

THE Z IN VIZ, AND IN OZ, has puzzled a great many people. It is simply the rapidly cursive manner of making the semicolon (whose origin has been explained) without removing the pen from the paper. It is not accurately pictured by the letter *z* used by modern printers, who save a font of type by using the letter which comes nearest the written conventionalism. In the old table of "Chymical Signs" I have reproduced, the sign of uncia shows the original manner of making the semicolon, which was doubtless  $\mathfrak{z}$ , *i.e.*, the dot and comma connected by a curved line, and the tail to the comma not so long as with



our cheap paper is customary. In old MSS., *quz* stood for *quandoque*, *quoz* for *quoque*, *az* for *apparet*, *hz* for *habet*, etc. We thus understand why *viz.*

<i>Quadratus</i> .....	□	<i>Quarile</i> .
<i>Quinta Essentia</i> .....	QE	<i>Quintessence</i> .
<i>Quantum Sufficit</i> .....	q.s.	<i>A sufficient quantity</i> .
<i>Quantum Vis</i> .....	q.v.	<i>What you please</i> .
<i>Recipient</i> .....	Ⓡ	<i>A Receiver</i> .
<i>Recipe</i> .....	R: 2	<i>Take</i> .
<i>Regulus</i> .....	☉	
— <i>Antimonii</i> .....	☉ ☿	<i>Regulus of Antimony</i> .
— <i>Ant. Stellat.</i> .....	☉ ☼	<i>Stellated Reg. of Antim.</i>
— <i>Stellatus</i> .....	☼	<i>Stellated Regulus</i> .
<i>Retorta</i> .....	9: ☉ ☉	<i>A Retort</i> .
<i>Saccharum</i> .....	ff	<i>Sugar</i> .
<i>Sal Alkali</i> .....	S	<i>Alkaline Salt</i> .
— <i>Ammon.</i> .....	℥; ℥; ✱; ☉ ✱	<i>Sal Ammoniac</i> .
— <i>Commun.</i> .....	⊖	<i>Common Salt</i> .
— <i>Gem.</i> .....	☿: ☿: ☉	
— <i>Marin.</i> .....	⊖: ⊖: ☉ <sup>M</sup>	<i>Sea Salt</i> .
— <i>Sedativum</i> .....	ss	<i>Sedative Salt</i> .
<i>Sapo</i> .....	o	<i>Soap</i> .
<i>Saturnus</i> .....	♄: ♄	<i>Lead</i> .
<i>Scorpius</i> .....	♏	<i>The Scorpion in the Zodiac</i> .
<i>Semis</i> .....	fs	<i>Half</i> .
<i>Sextilis</i> .....	✱	<i>Sextile</i> .
<i>Sigillare Hermet</i> .....	S.H	<i>To seal Hermetically</i> .
<i>Sol.</i> .....	☉	<i>The Sun, or Gold</i> .
<i>Solvere</i> .....	☿☿	<i>To dissolve</i> .
<i>Secundum Artem</i> .....	s.a	<i>According to Art</i> .
<i>Spiritus</i> .....	☿	<i>Spirit</i>
— <i>Vini</i> .....	V	<i>Spirit of Wine</i> .

FIG. 7.

stands for *videlicet*, and *oz* for ounce (or uncia), although there is no *z* in the words themselves.



PREScription SIGNS.—The paragraphs preceding the last one prepared the mind to understand the

— R :	℞	Rectified Spirit of Wine.
— T :	℥	Proof Spirit.
Stannum :	℥	Tin.
Sublimare :	—	To sublime.
Stratum super Stratum SSS		Layer upon Layer.
Succinum :	† BB	Amber.
Sulphur :	♂	Sulphur.
— Philos :	♂	Sulphur of the Philosophers.
— Vivum :	♂	Mineral Sulphur.
Talcum :	X	Talc.
Tartarus :	♀	Tartar.
Terra :	▽	Earth.
— Absorbentia :	▽	Absorbent Earth.
— Calcar :	C ▽	Calcareous Earth.
— Sigillata :	♂	Sealed Earth.
— Silic; vel Vitr :	♂	Siliceous Earth.
— Alumin :	A ▽	Earth of Alum.
Tinctura :	℞	Tincture.
Tutia :	♂	Tutty.
Venus :	♀	Copper.
Vinum :	V	Wine.
— Album :	VA	White Wine.
— Coctum :	VC	Burnt Wine.
— Rubrum :	VR	Red Wine.
Vitriolum :	⊙	Vitriol.
Vitrum :	XX; 0; 10	Glass.
Uncia :	℥	An Ounce.
Urina :	□	Urine.
Volatilis :	☉	Volatile.
Zincum :	℥; ℥	Zinc.

FIG. 8.

origin of viz., and oz., and the explanations of these two contractions were necessary to understand the



signs used by physicians for drams and ounces. The first stroke of the sign,  $\bar{z}$  is the straightened out *u* of *uncia*, and the remainder of the figure is simply our old, now well-understood, slurred, cursive semicolon. In the sign for drachma the *d* has entirely disappeared and the sign of the contraction has become the sign of the whole word,—the Cheshire cat has vanished, leaving only its grin!

The sign gr., used for grain, has not suffered, but in that for scruple ( $\mathfrak{D}$ ), the long *f* is crossed by the cursive *r*, and the whole conventionalized beyond the recognition of those indifferent to evolution. The sign for *one-half*,  $\mathfrak{s}$ , is, of course, the contraction of *semisiss*, composed of the long and the short *s*.

By observing the sign in the appended table for *Recipe*, it will be noticed that the first given,  $\mathfrak{R}$ , is made cursive and conventional in the second,  $\mathfrak{Z}$ . This indicates what is undoubtedly true, that the sign with which we head our prescriptions is not the symbol of Jupiter representing an invocation to that deity, but is simply the initial letter of *Recipe* crossed with the ligature denoting a shortening or contraction.

From an old medical dictionary (Motherby's), I have extracted two quarto pages of "Chymical Signs," which make eight pages of ordinary duodecimo size. I have reproduced these here in order to illustrate the methods and objects in the sign-making which was so popular in the middle ages. In the first place one gets a glimpse of the desire to keep from patients the nature of the remedy being used, and to illustrate the proverb *omne ignotum pro magifico*. To stimulate the belief in the mystery and efficacy of the science, so-called, was a method of increasing the respect of the people for claptrap, or at best for the crudest empiricism. The fact is commended to those who argue for the retention of Latin in our prescription-writing. A study of the table will throw not a little light on the principles and methods of making contractions, and of the evolution of signs.