

**Monograms & ciphers, designed and drawn by A. A. Turbayne and other members of the Carlton studio.**

Turbayne, A. A. (Albert Angus), 1866-1940.  
London, Caxton, 1905,

<http://hdl.handle.net/2027/yale.39002024325863>

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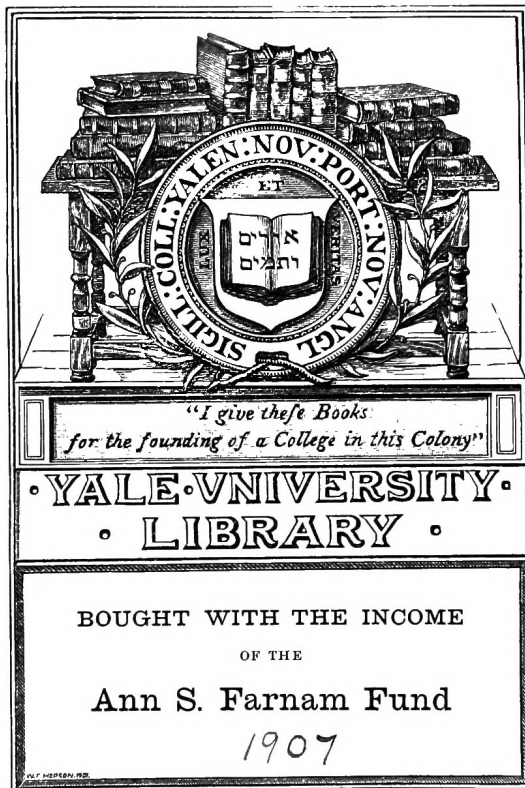
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MONOGRAMS  
AND  
CIPHERS









ROYAL CIPHER

# MONOGRAMS & CIPHERS

DESIGNED · AND · DRAWN · BY  
A · A · TURBAYNE  
AND  
OTHER · MEMBERS · OF · THE  
· CARLTON ·  
STUDIO



LONDON  
THE · CAXTON · PUBLISHING · CO  
MDCCCCV









## INTRODUCTORY NOTE

**I**N laying out this book I have put into it the experience of many years of actual work in the designing of Monograms, Ciphers, Trade-Marks, and other letter devices. I have given the work much careful thought in order to present the most useful material, to give that material on a good workable scale, and in such a way that any design can be quickly found. By the arrangement of the designs the plates form their own index. On Plate II will be found combinations of AA, AB, AC ; on Plate III combinations of AC, AD ; on Plate IV, AE, AF, AG, etc. A device of MB would be looked for under the letter of the alphabet first in order, B ; it will thus be found in the BM combinations on Plate XVI.

Now the letters AA have only one reading ; two different letters, AB, can be read in two ways ; while AAB can be read in three ways ; and ABC, or any three different letters, can be placed to read in six ways.

A complete series of designs, AA, AB, BA, AC, CA, to ZZ, would run to 676 devices ; add to this a series with a repeated letter, which would be the next in order, giving one reading only, AAB, BBA, etc., of which there are 650, and we get 1326 combinations. This would require, if carried out with nine

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designs on a plate, 147 plates. Our book was not to exceed 135 plates, and in addition to as complete a series as possible of two-letter designs, there were to be included some plates of sacred devices, designs of three different letters, and other matter which would make a work of practical use.

By limiting the number of combinations containing the I and J, and the O and Q, which can easily be made interchangeable in the working, and giving but a single reading of most of the devices containing the letters X, Y, Z, which will be the least used, I have been able to present a good working selection of two letters and a repeated letter in 113 plates.

Three different letters, as I have stated, can be read in six ways. Take, for instance, the first three letters of the alphabet, and we have—

ABC	BAC	CAB
ACB	BCA	CBA

Add a fourth letter to the three, and we have four times six, or twenty-four readings, as follows :—

ABCD	BACD	CABD	DABC
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA
ADBC	BDAC	CDAB	DCAB
ADCB	BDCA	CDBA	DCBA



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It will thus be seen that books advertised as made up of three- and four-letter combinations must be very fragmentary, as anything like a complete work of these units would run to an enormous length.

Now let us see what a work of three-letter designs would mean. ABC, ABD, etc., giving an alphabet of one reading only, would run to 2600 designs. A book of this sort would be of little use, as the design looked for would probably not be there, for every one of these 2600 groups can be placed to read six different ways; and to make a complete work of three-letter designs, with no repeat letters even, would require a showing of 15,600 Monograms or Ciphers. But what about the three letters, one of which is a repeat? A glance through any list of persons will show that these have a right to be included, though they do not occur as frequently as three different letters. Add these to the list for a complete three-letter book—there are 1976 of them, including 26 combinations where the three letters are the same, AAA, etc.—and we have 17,576 designs to be shown. Following the plan of nine designs on a plate, we would require 1953 plates, making a work of fourteen volumes the size of the present book. A bulky work of this sort would not only be unpractical, but the cost of production and the price at which such a work could be sold, would place it beyond the reach of most of those workers to whom we hope to appeal.

In the plan I have adopted the book is practically a complete

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work of two-letter combinations in a single volume. A device of any two letters will always be readily found, which should be sufficient to furnish the designer or artisan with a base upon which to build a design of three or more letters.

There is to-day a growing taste for severe chaste forms in printing types and lettering; the same influence is also directing a change of style in the more decorative Monogram and Cipher. The florid combinations of the last two centuries are gradually falling into disuse, and are giving place to the very simplest forms. The aim of the present work is towards simplicity, but in order that the book may appeal to various tastes, and thus be of greater value, examples of many styles are included.

Each of these styles, while based on some familiar form which has long been in use, has had its pruning, and as much of the superfluous flourish not necessary to letter or design has been discarded.

The styles included may be classed under five principal heads—Roman, Gothic, Sans Serif, Cursive or Running, and what I might call Rustic. These styles are treated in various ways, and in light and heavy letters. Here and there throughout the work a design will be found that may suggest a treatment for some particular device. These are odd pieces that have occurred to me as the plates were in progress, the execution of most of which would probably be more satisfactory in embroidery than any other medium. There are three principal forms of treating

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a device; I will call them the Imposed, Extended, and the Continuous forms. By the Imposed form I mean a design where the letters are written or interlaced directly over one another. In the Extended form the letters are interlaced or written side by side. In the Continuous form the device runs from beginning to end without a break. In the Imposed form the principal letter, whether it is first or final, should be accentuated, either by making it slightly larger, heavier, or in some other way best suited to the material in which it is being produced, it may be colour or texture. For the Extended form, if the letters are to be read in the order in which they follow one another, all may be treated alike. In this form, however, it is often advisable, for design and balance, especially when filling a circular space, to place the principal letter in the centre; in that case it may be drawn larger, and in some other way made more important. The Continuous form should read as the letters would be written, and care must be taken to place them so that they will not appear to read in some other way. It is intended that the Monograms and Ciphers shown in the following plates be considered as outlines only, as models or working drawings. The solid or tint grounds need not be taken as part of the design; they are intended to show which are planned in a round, and which in a square panel. There are but a few cases in which any detail is given that would apply to a particular craft, or suggest the material in which they are to be worked. Each artist or craftsman can use the forms, supplying his own

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detail to suit the technique of the work in hand. By this means the book should be equally useful to any craft. With this broad rendering it will be noticed that some of the designs do not appear to read in the order described; in such cases the important letter requires that detail which I have suggested in some instances with a tint or black. The order of description is followed throughout the book for the sake of easy reference; it is only departed from in a few places where one reading only is intended, as in the LRR on Plate LXXXIV, the continuous Monogram NMN on Plate LXXXVII, and the continuous Cipher WTW on Plate cx.

Before proceeding further I should state the difference between a Monogram and a Cipher. This is necessary, as the two devices are constantly being miscalled; some authorities too, while correctly describing a Monogram, give a Cipher for illustration. A Monogram is a combination of two or more letters, in which one letter forms part of another and cannot be separated from the whole. A Cipher is merely an interlacing or placing together of two or more letters, being in no way dependent for their parts on other of the letters.

Of the two classes Monograms are the more interesting, probably on account of their being more difficult to plan, though I think they are rarely as pleasing to the eye as the Cipher, except in the very severest forms. Compare the whole plate of Ciphers, cxiv, with the next plate, cxv, composed entirely of Monograms.

The difficulty in designing Monograms does not so often lie



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in being able to plan the Monogram, as in being able to produce one that will be read by others, and where all the letters will read, and those only that are intended. When we begin to put two or three letters together that are made up of one another into a single unit, other letters are suggested or occur in the device not intended; or again, two or three of the letters will be so apparent that the third or fourth will only be known to the designer or owner. Take, for instance, the PQR on Plate cxv; the small device is the better one of the two, but few will read it other than PQ, QR, or PR. Personally I prefer a design that is a little obscure, if the lines are good, if it is a fine piece of ornament.

A Monogram or Cipher is in all cases intended for ornament, whether used as a mark of ownership by private individuals, or for a company, or a trade-mark. For purposes of commerce it is of course important that the device should be distinct and easily read. The same might apply also to the design for a club or society mark. For private use, however, where the device is to enrich a piece of jewellery, plate, the binding of a book, a piece of furniture, or part of the decoration of a house, it should in the first place be a good design. If the conceit is legible to the owner, and is of such fine proportion as to be thoroughly satisfying to the eye, why should it read like an advertisement, or be like ‘Everything in the shop marked in plain figures’?

Some of the most beautiful Ciphers I have seen are to be found on old French bindings, many of which would be unintelligible if

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we did not know for whom the books were bound. These Ciphers form in many instances the sole decoration of the binding, sometimes but a single impression appearing on each side, yet the book satisfies one as being perfectly decorated. This is so often the case with the Monogram and Cipher—it may be the only ornament that is to enrich a fine piece of workmanship—that in such places it should be a piece of choice design.

This brings us to that disputed point in this branch of art, the reversing of letters. For my own part I have no hesitation whatever in reversing a letter, or turning it upside down, or any other way, if it will produce a good piece of ornament. It is just as easy to fill a space, and fill it with good balance, with the letters facing as we are accustomed to see them, but this method will rarely produce that grace, beauty of line, and easy balance that letters of similar form turned toward one another will give. As an instance of this I would go no further than a single illustration which must be familiar to all—the Monogram HDD of Henry II and Diana of Poitiers—Henri Deux, Diane. It matters not where we find this, in the decoration of a ceiling, in enamel or painted ornament, or as a tooled book-binding, it has a dignity and feeling of easy repose that is never tiring. It would have been just as simple for the designer to have made a Monogram of these letters without reversing one of the D's, but no other possible arrangement would give the grace of line we find in this device. Another excuse for the reversing or turning upside down of a letter is, that when the

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letters A, B, C, D, E, K, M, N, S, V, W, and Y occur repeated, you often get by turning a letter over or upside down a design that will read the same from all points of view. This advantage must be apparent to all, where the Monogram or Cipher is to be seen from different positions, as it will be, for instance, in the top of an inlaid table, a ceiling, a tiled or inlaid floor, or in the decoration of some small object like a finely bound book that will lie on a table, and on many a piece of the goldsmith's and silversmith's work.

The H, I, N, O, S, X, and Z can be drawn in Roman so as to appear the same upside down, and do not require to be turned over or stood on their heads; but with the letters A, M, V, W, and Y, though they will not require reversing where two occur in a combination, one will have to be turned upside down to make the design read the same from all points of view. If there are only the two letters, this will be simple, but if three or four letters are to be put together, it will depend on what the third or fourth letter is whether this is possible or not. I do not hold with doubling one of the letters in a device simply to turn over and make symmetry. If there is not a repeat letter, or a letter of similar form in the combination of letters to be put together, all letters should be doubled if symmetry, or reading from various points of view, must be had. On Plate LXXXV will be found a Cipher LT, planned without reversing to read the same upside down; a third letter, H, N, O, S, X, or Z, could be introduced without altering the LT, so that the combination of

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three letters would read in the same way, whether looked at from the top or the bottom. There are but few letters that will plan in this way. When it is required of a design that it will read from all points of view, Roman letters will usually be found to give the most satisfactory result.

Intermixture of styles should always be avoided. If the Roman and Gothic are found too severe to suit a given subject, the Cursive and Rustic letters with their easy flowing lines can be made to fill almost any space one will be called upon to fill with either Monogram or Cipher.

A device besides being of one style of letter should also be pure as a whole; plan either a Monogram or a Cipher, but don't combine the two. The only excuse that might be advanced for the mongrel form, would be where a combination of three or more letters contained conjoined or hyphenated words, represented by, say, AB-B or BC-D. Here the B-B and the C-D would form Monograms, the A and the B separate letters interlaced into them. I have given illustrations of this mixed device on Plate II, BBA; and on Plate XLII, EEO. For this last device there is no excuse, except as a trade-mark to be written quickly; a circle with three horizontal strokes, an upright stroke connecting the three in the centre, forming a solid device, EEO, on the lines of the Cipher FFO on Plate XLIX.

When planning a device avoid, if it is at all possible to do so, having three lines crossing at the same point, making three planes.

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There is always a confusion in the interlacing if there are more than two planes, which produces a clumsy appearance in the design. There are cases when slanting or curved lines come across a straight line, where three crossings could only be avoided by contorting one of the letters ; in such a place it will be better to allow the three planes. Examples of Ciphers having three crossings at one point will be found on Plate XL, KE, Plate LXXXIX, MMT, and on Plate XCI, YM. Ciphers not interwoven, but placed side by side forming decorative lines, will be found on Plates XXIII, XXXIX, XLVII, and LX. One with the letters written one within another, a useful form for trademarks, is the CCG on Plate XXII.

A number of the plates have the nine designs carried out in one style. These should be useful as examples of the different characters of letters, as specimen pages for styles. I have grouped them under four heads as follows :—

### ROMAN.

Plate LXXXI, light. Plate LXXXII, light, with cord and tassel. Plate LXXXVII, uniform stroke, small serifs. Plate XCVII, sans serif, with cord and tassel.

### GOTHIC.

Plate XII, heavy. Plate LXXXVIII, light, pointed. Plate XCII, heavy, ending in leaf-forms. Plate XCIII, heavy, suggesting low relief, for stone- or wood-carving. Plate C, black-letter.

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### CURSIVE.

Plates XIII and XV, foliated, embroidery. Plate LXXXIII, continuous. Plate LXXXIV, half-cursive, upright. Plate LXXXV, slanting. Plate LXXXVI, upright, uniform stroke. Plate XC, cursive-Roman, thin, uniform stroke. Plate XCIX, light, upright, flourish.

### RUSTIC.

Plate XI, jewellery. Plate XX, two-colour. Plate XXXV, flourish. Plates XCI, XCIV, XCV, and XCVI, upright. Plate XCVIII, quill-rustic.

Monograms and Ciphers of three different letters will be found on Plates CXIV, CXV, and CXVI. On Plates CXVII to CXXI are firm-marks of two letters joined with the Ampersand, &. Plates CXXII to CXXVII show an alphabet with the ' & Co. ' examples being given in round and square form. The last one of these plates contains also five examples of Numerals in Cipher, 1905, 1906, 1907, 1908, and 1909. Sacred Devices and Names fill Plates CXXVIII to CXXXII. Plates CXXXIII and CXXXIV are made up of Labels and three-letter Monograms. The letters for the Monograms are taken at random from a list of authors. The last plate, CXXXV, is a suggestion for the decorative treatment of Sacred Inscriptions in Monogram and Cipher, following the style of the Italian Renaissance.

One plate has been added to the work, engraved by



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Mr. Thomas Moring, which shows some few ways in which these designs can be intelligently interpreted for a particular craft. It also shows how the character of a design may be preserved while a change is made in the letters or in their position. Plate L of the work was taken as the model. The PPF has been altered to EPF; the FQ transposed and made to read QF; FR to read FE; and RF to read RS. In the FFR the R has been made into a P, an R substituted for the reversed F, and with a slightly different treatment of the second F, the whole made to read RFP. In the sixth design the reversed R has been turned back, a very slight difference of treatment in all the letters being necessary to plan this well. The last three designs continue in the same way. A comparison of the engraved plate with Plate L will show with what little alteration a different character or reading can be introduced into a design.

I trust there will be found something in this book to please all tastes, if only a single device. For any errors there may be in the work I am alone responsible. In the drawing of the plates I have been ably assisted by different members of the studio. I am also indebted for the whole of Plate x. One error has passed me unnoticed till the part was published. What should have been DP, on Plate xxxiv, I have drawn OP; this, though a correct Cipher, is out of place on this plate.

A. A. TURBAYNE.

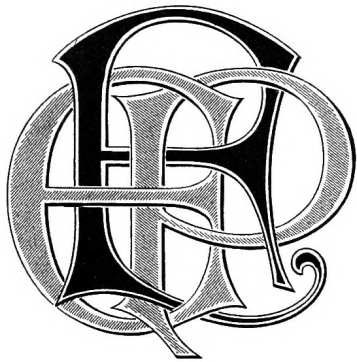
CARLTON STUDIO,  
LONDON, *March* 1906.



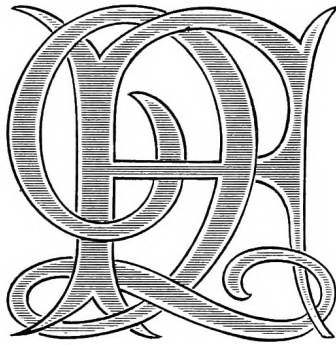


MONOGRAMS  
AND  
CIPHERS

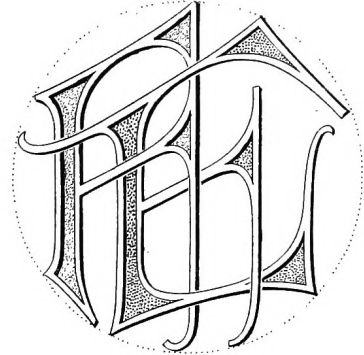




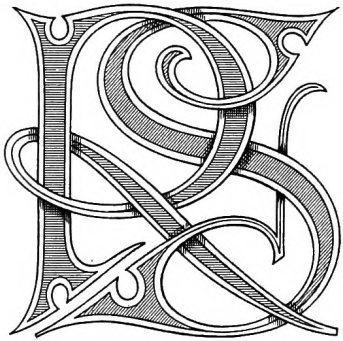
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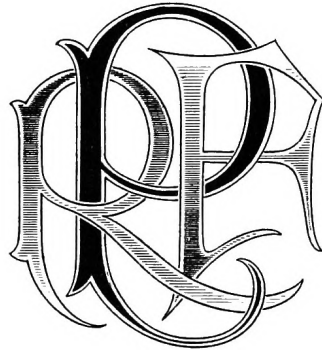
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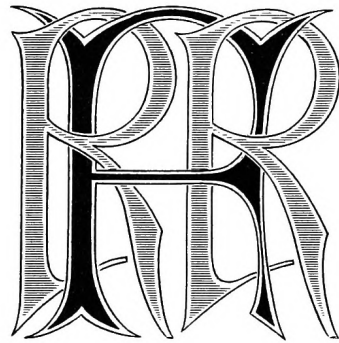
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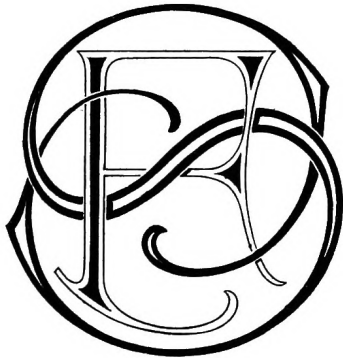
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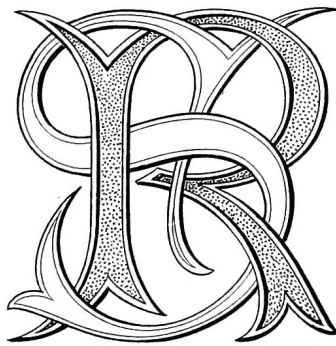
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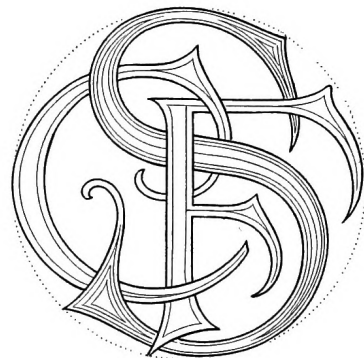
RRF



FS



SR



CFS

**SUGGESTIONS AS TO VARYING TREATMENT**

BY THE ENGRAVER OF THE DESIGNS IN THIS WORK







AA



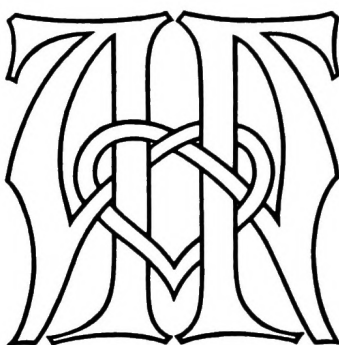
AA



AA



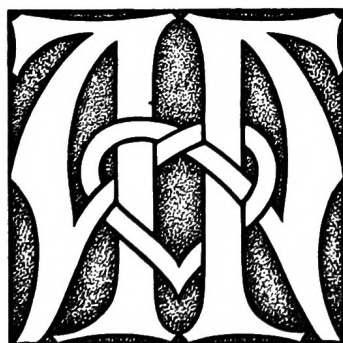
AA



AA



AA



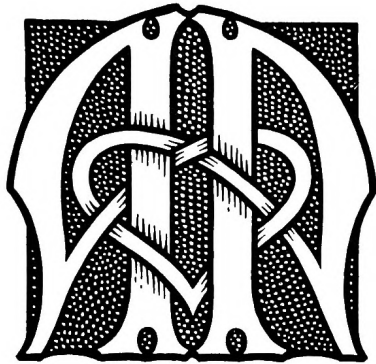
·VARIOUS ·TREATMENTS·OF·THE·SAME·DESIGN·

e



PLATE I—AA

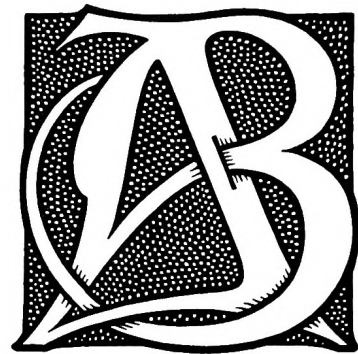




AA



AA



AB



BA



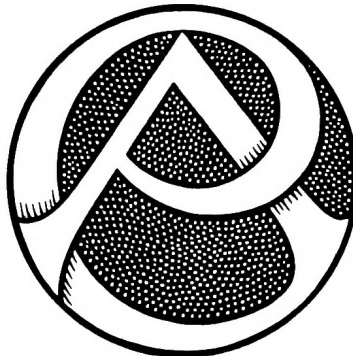
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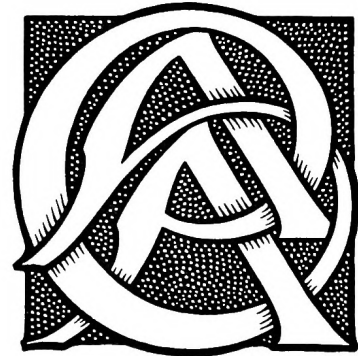
BBA



AC



CA



AAC



PLATE II—AA, AB, AC







CCA



AD



AD



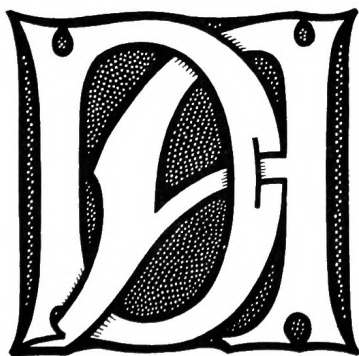
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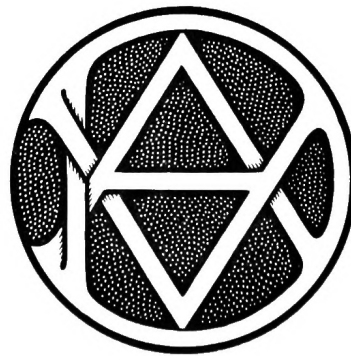
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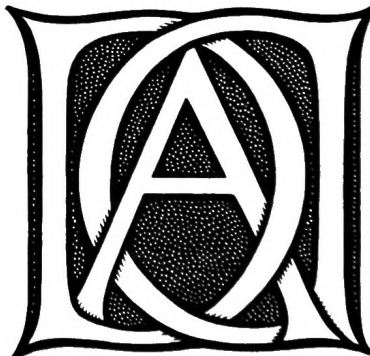
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DA



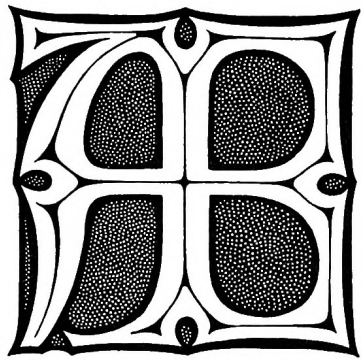
AAD



DDA



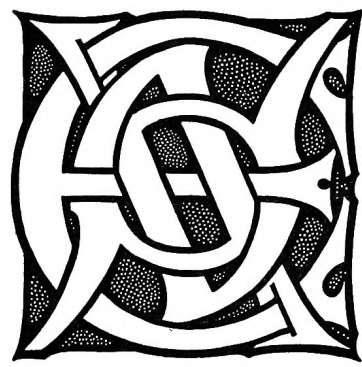
PLATE III—AC, AD



AE



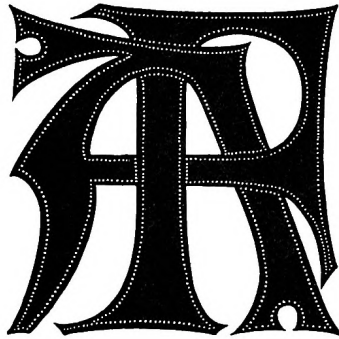
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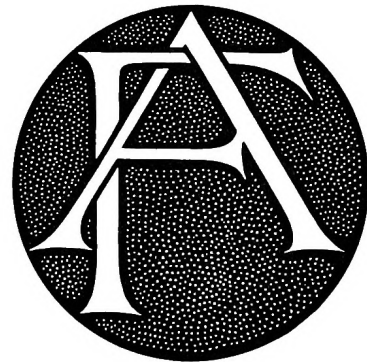
AAE



EEA



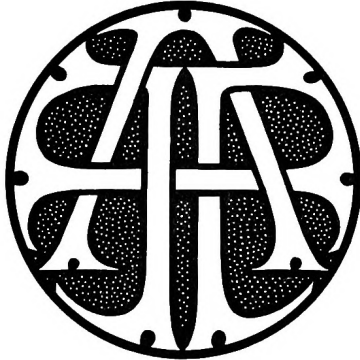
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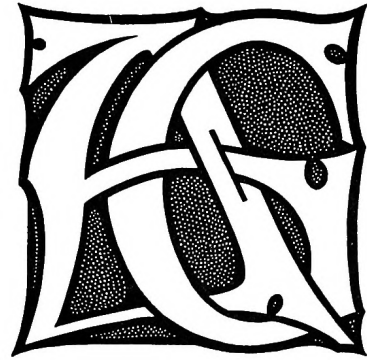
FA



AAF



FFA



AG

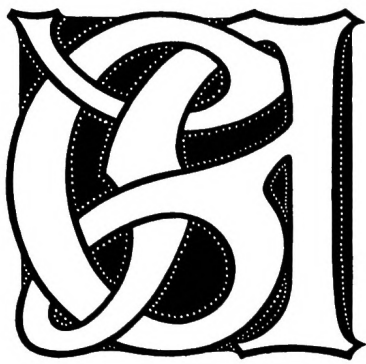


PLATE IV—AE, AF, AG





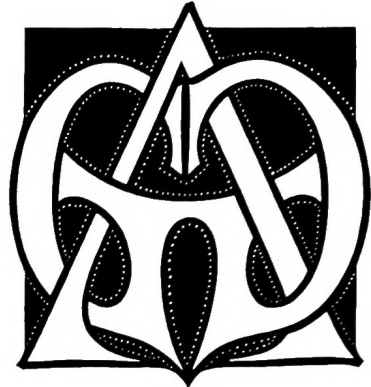




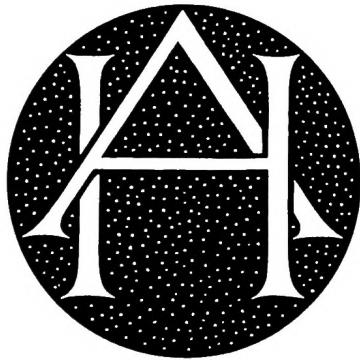
GA



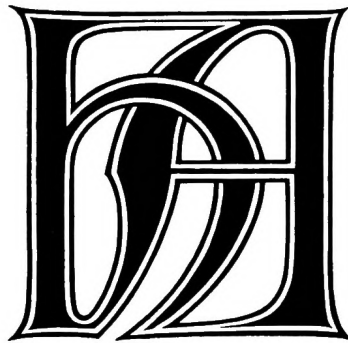
AAG



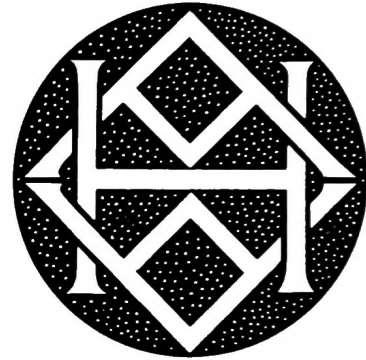
GGA



AH



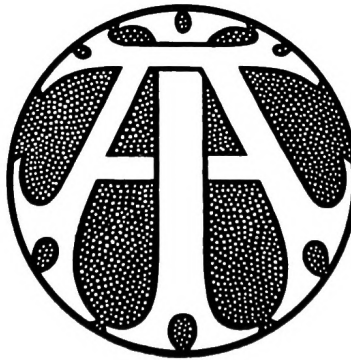
HA



AAH



HHA



AI



AAI

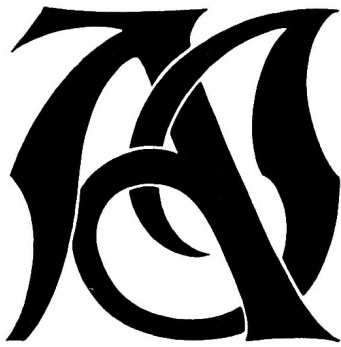
6



PLATE V—AG, AH, AI



IIA



AJ



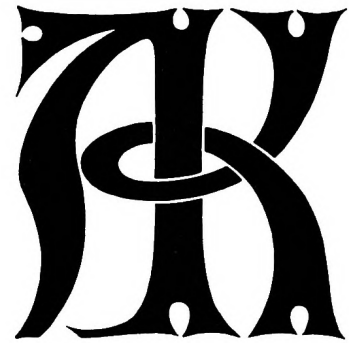
JA



AAJ



JJA



AK



KA



AAK



KKA

6



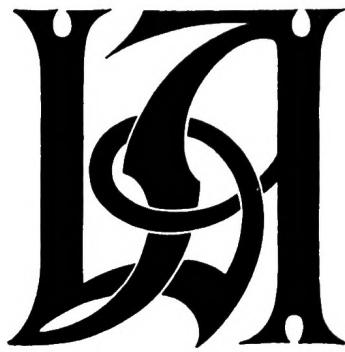
PLATE VI—AI, AJ, AK







AL



LA



AAL



LLA



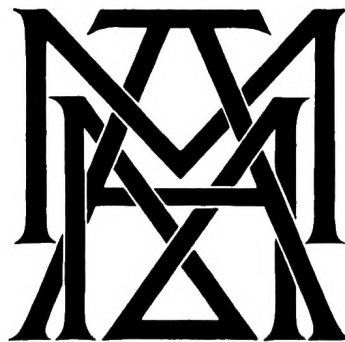
AM



MA



AAM



MMA

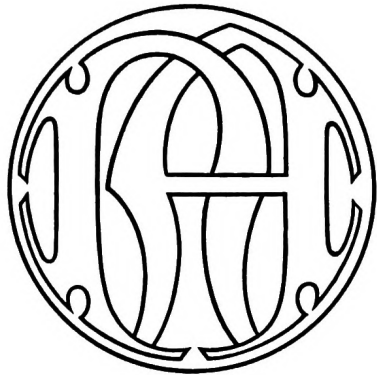


AN

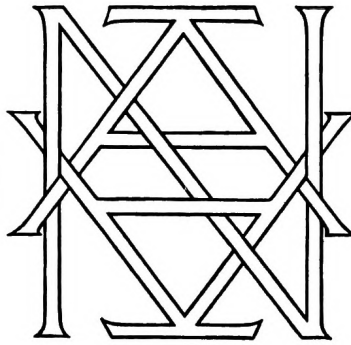
6



PLATE VII—AL, AM, AN



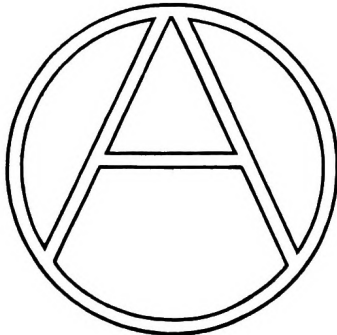
NA



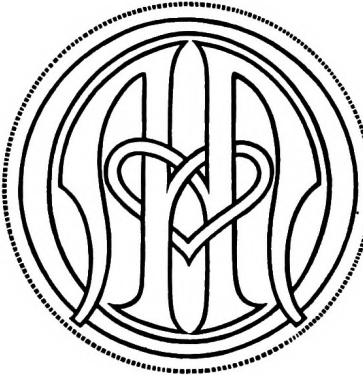
AAN



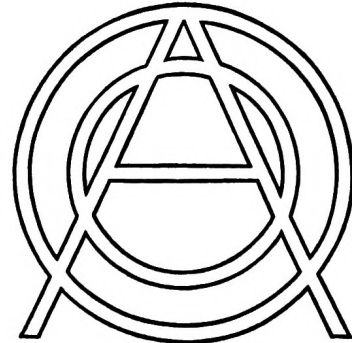
NNA



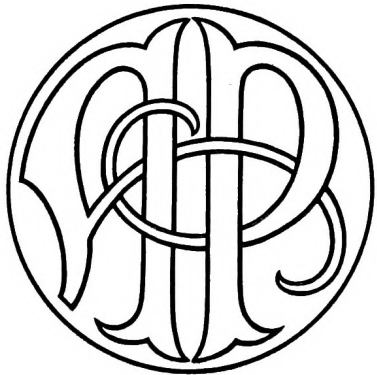
AO



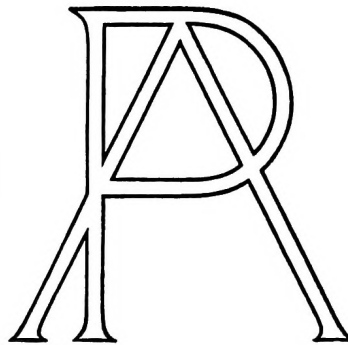
AAO



OOA



AP



PA



AAP

6

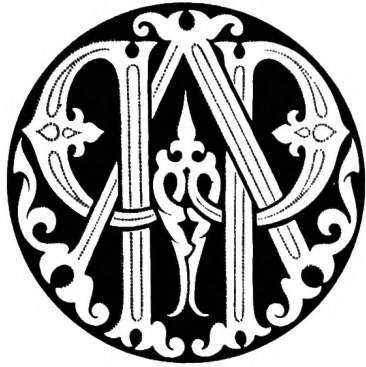


PLATE VIII—AN, AO, AP









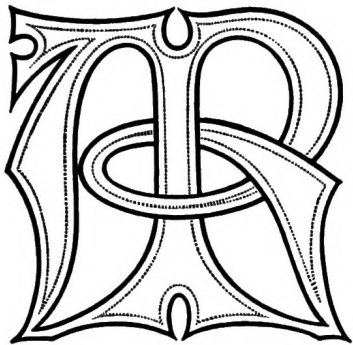
PPA



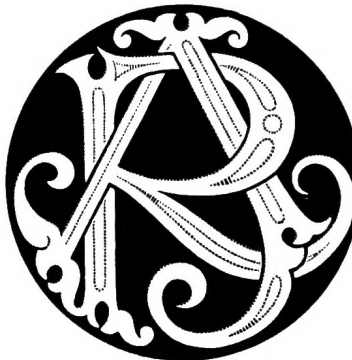
AQ



QA



AR



RA



AAR



RRA



AS

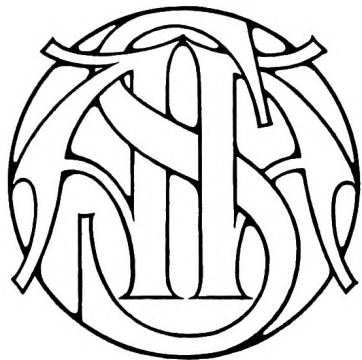


SA

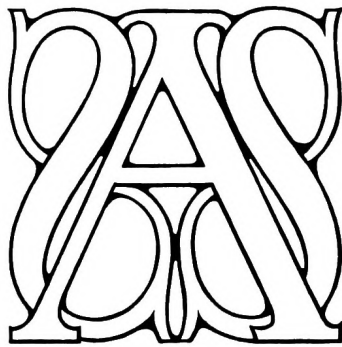
6



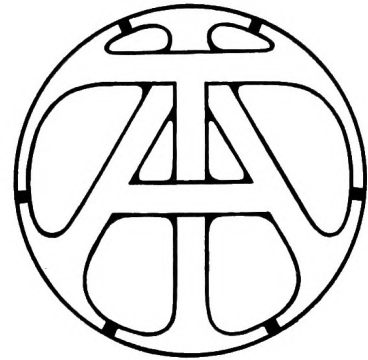
PLATE IX—AP, AQ, AR, AS



AAS



SSA



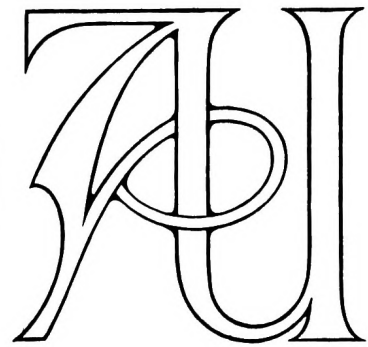
AT



TA



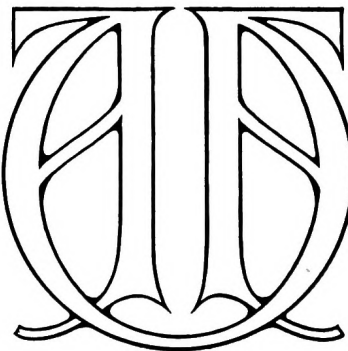
TTA



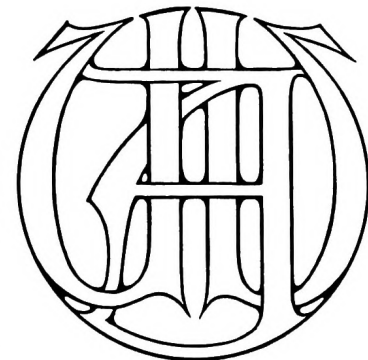
AU



UA



AAU



UUA

AM

6

PLATE X—AS, AT, AU





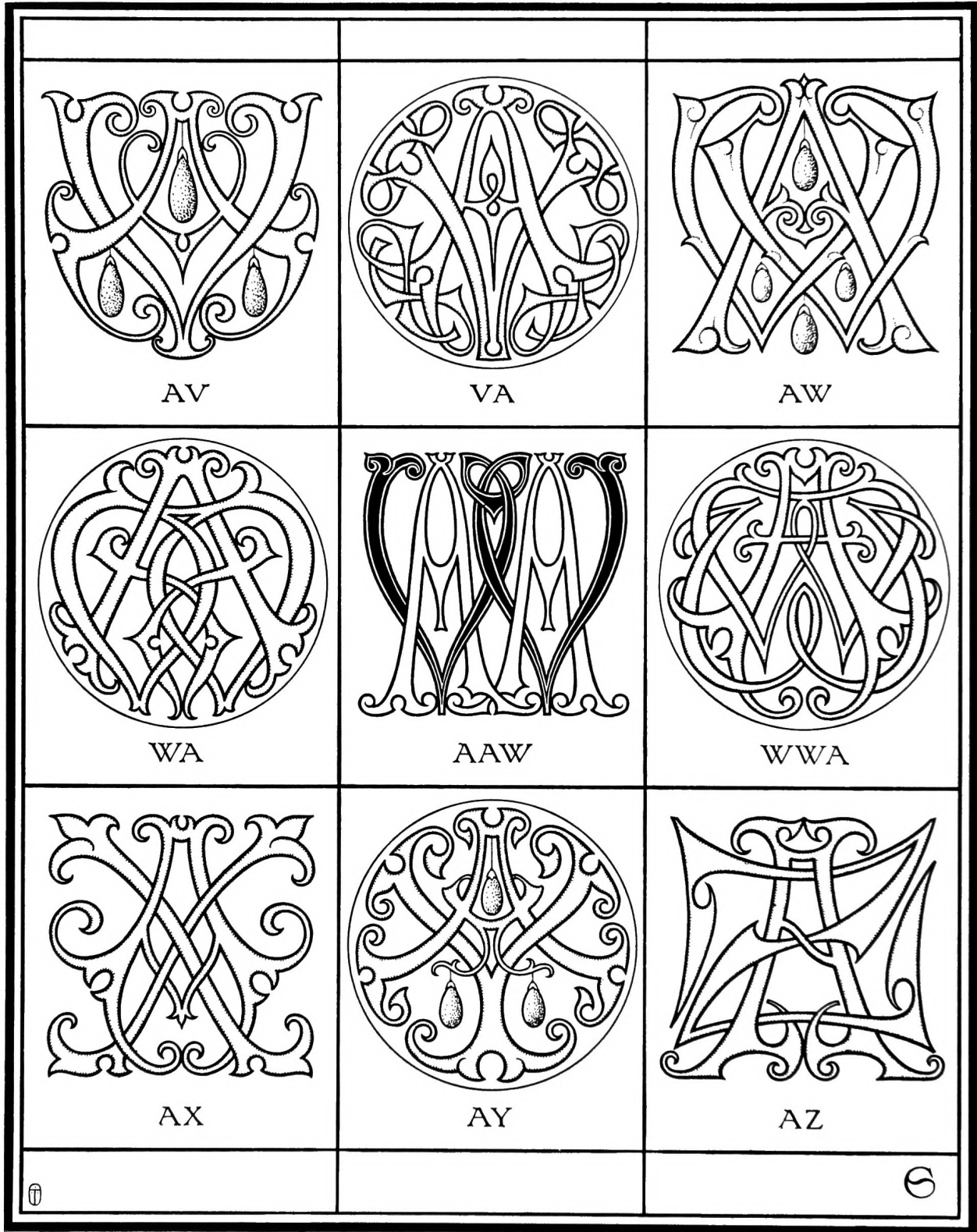


PLATE XI—AV, AW, AX, AY, AZ

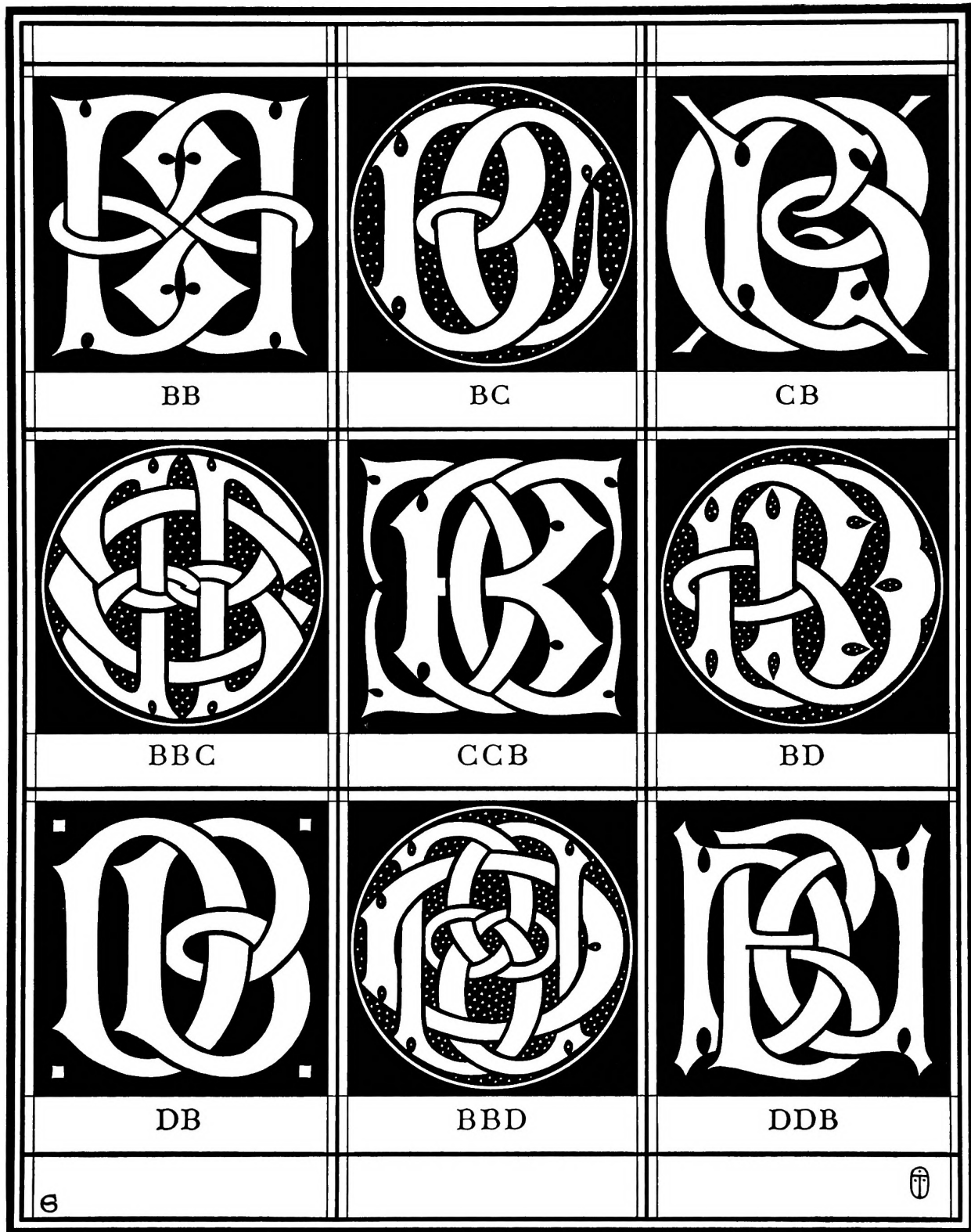


PLATE XII—BB, BC, BD







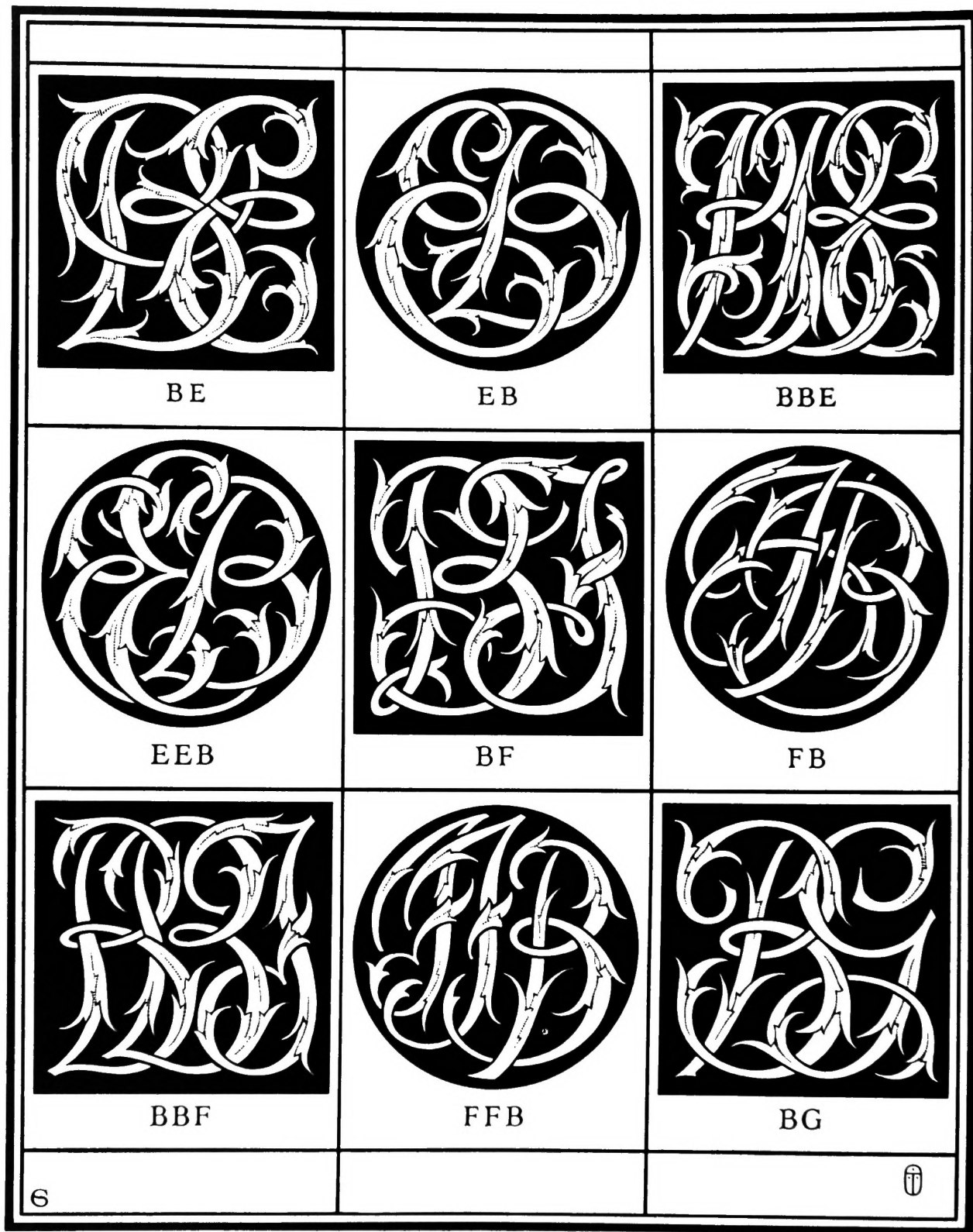


PLATE XIII—BE, BF, BG

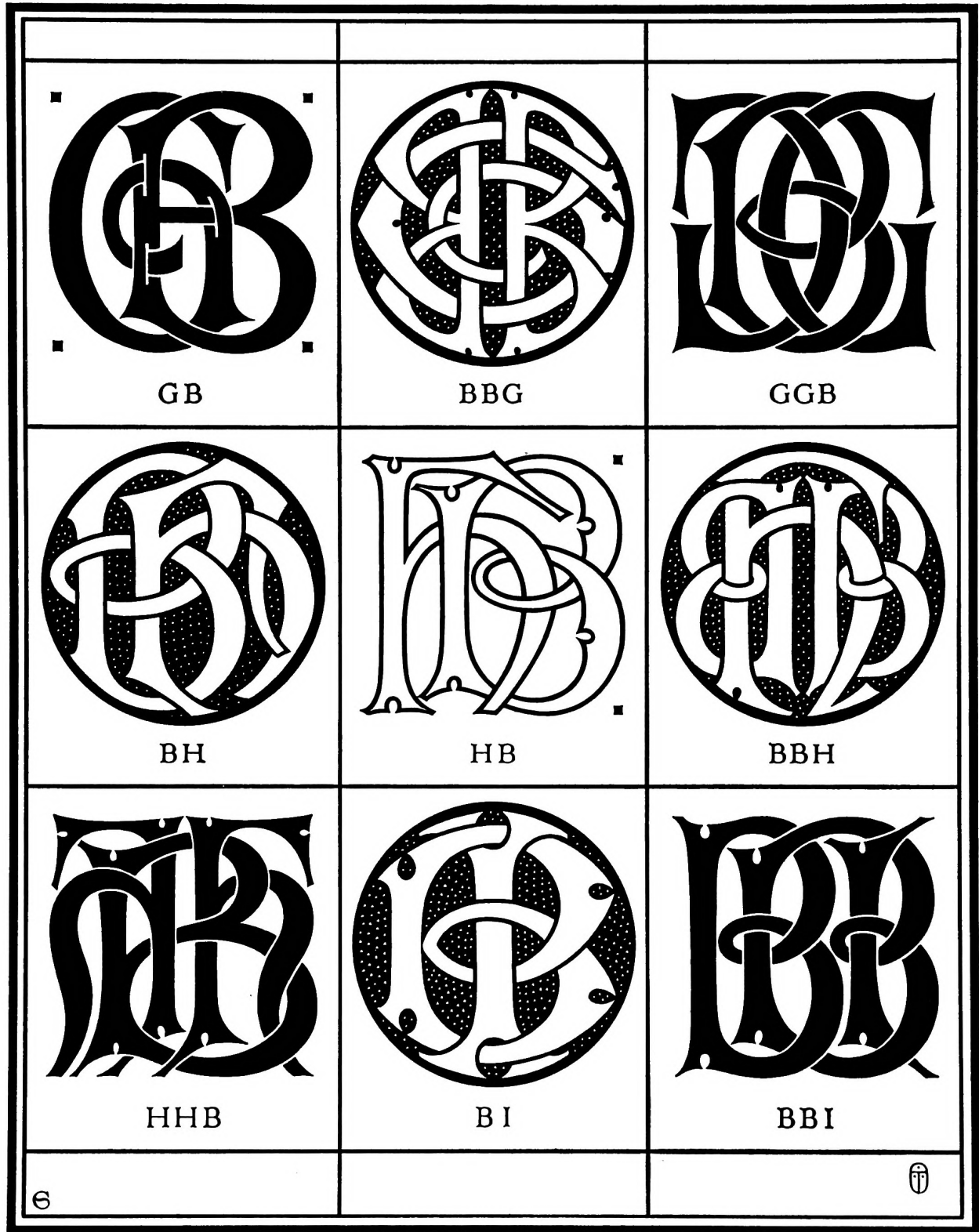


PLATE XIV—BG, BH, BI





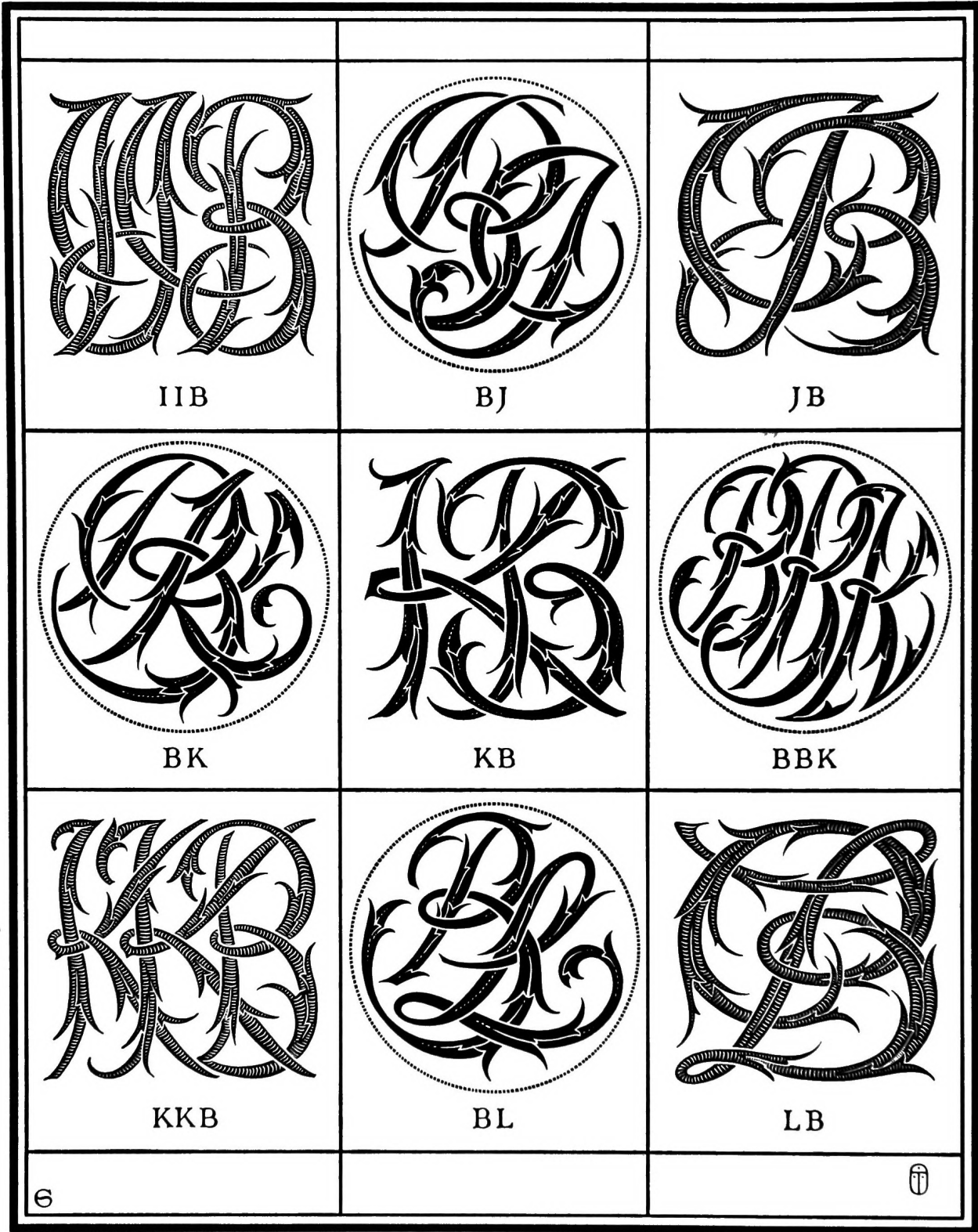
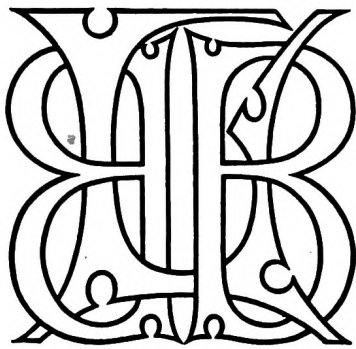


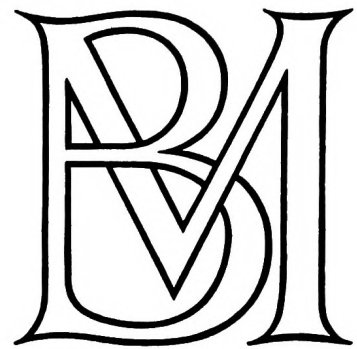
PLATE XV—BI, BJ, BK, BL



BBL



LLB



BM



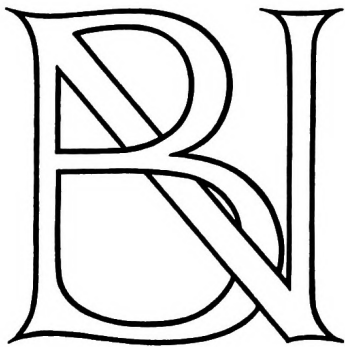
MB



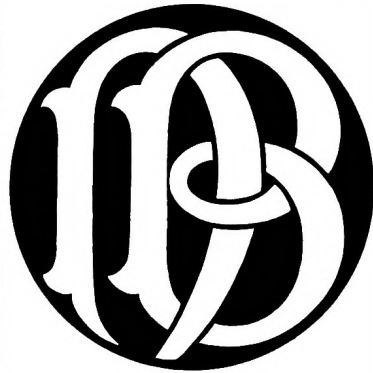
BBM



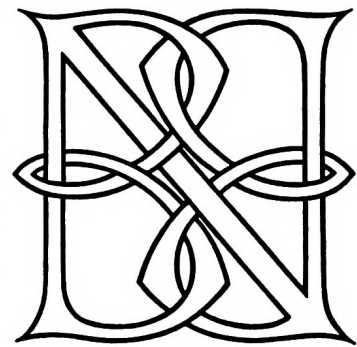
MMB



BN



NB



BBN

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Ⓢ

Handwritten scribbles on the right margin, including a large 'A' and other illegible marks.

PLATE XVI—BL, BM, BN







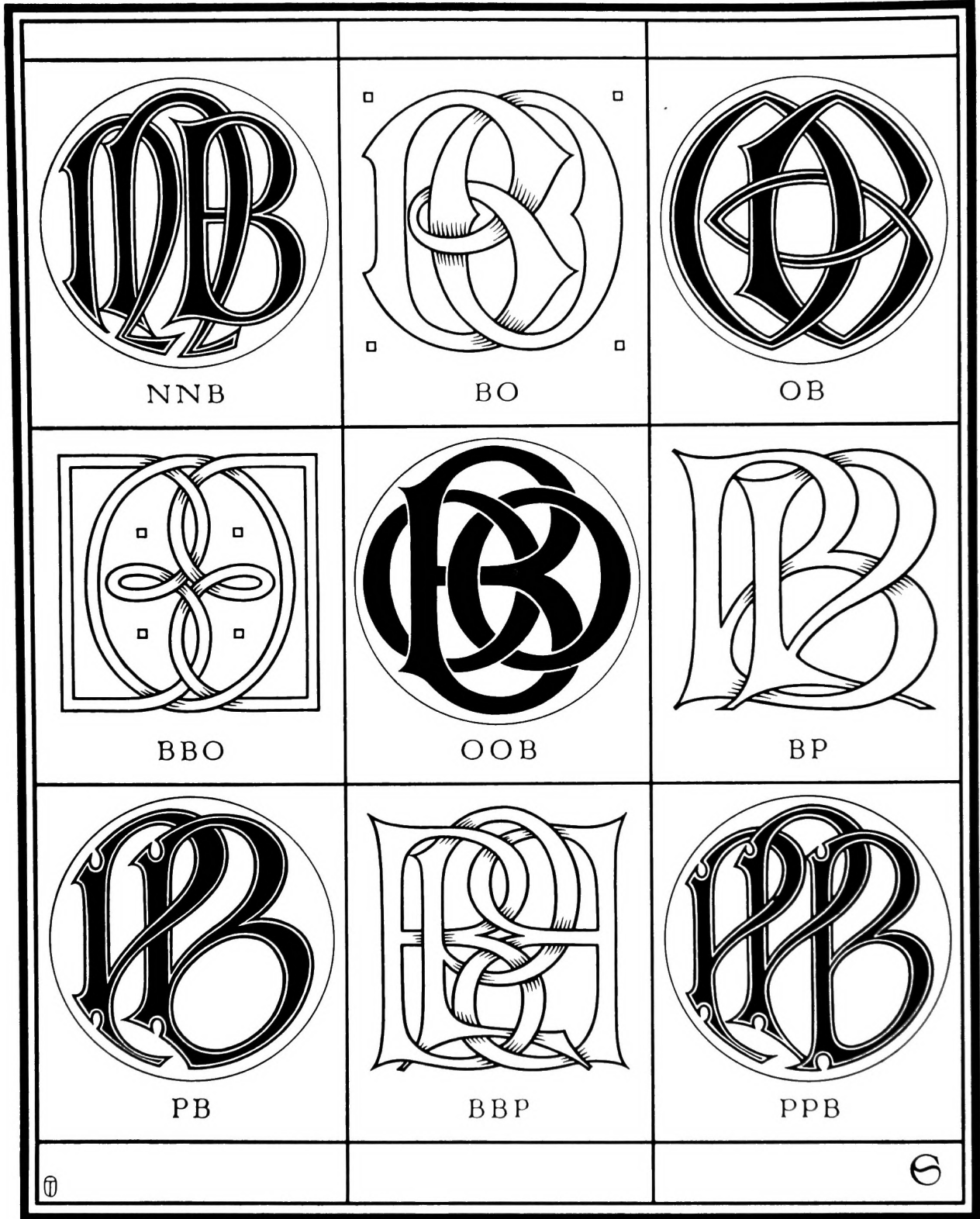


PLATE XVII—BN, BO, BP

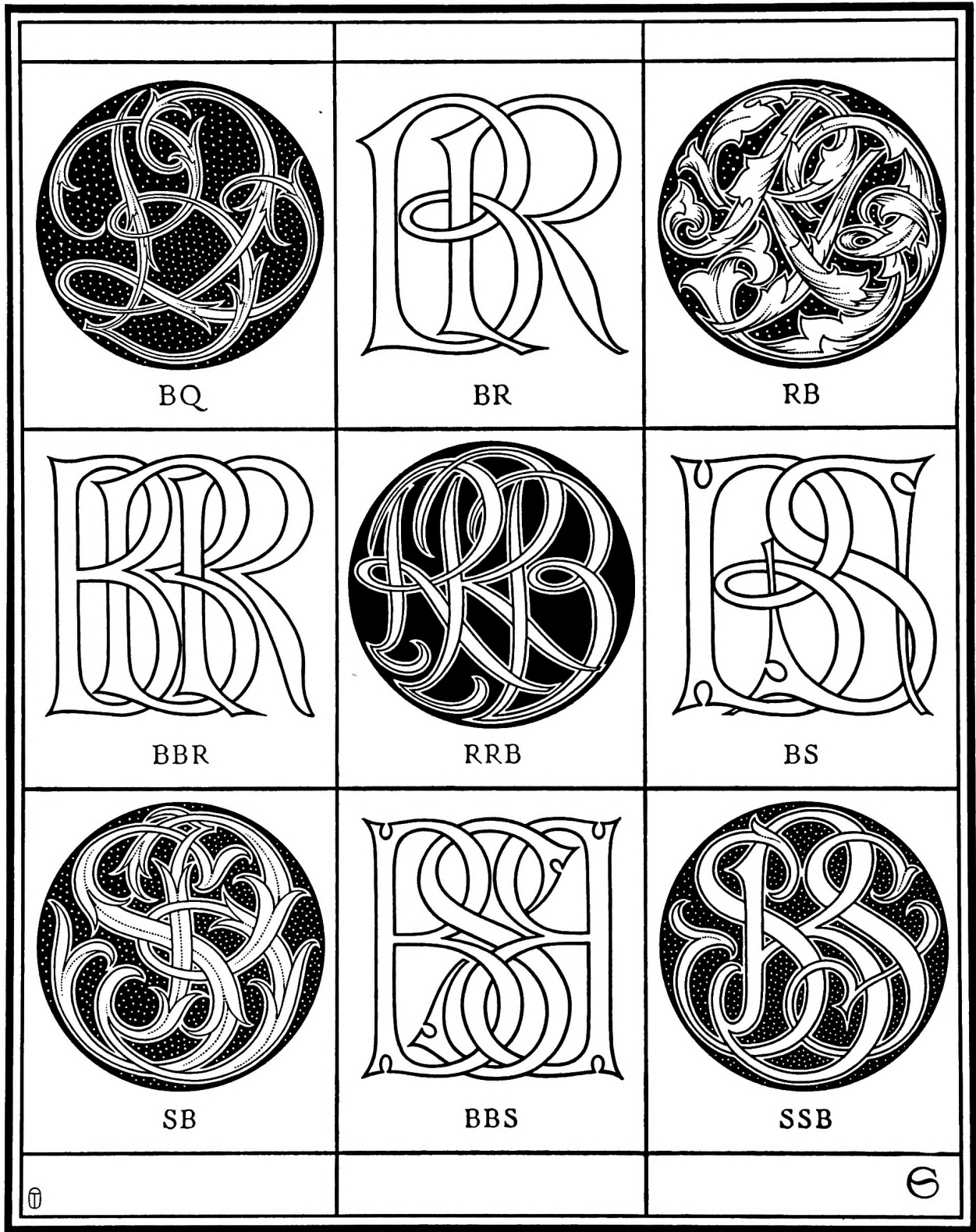
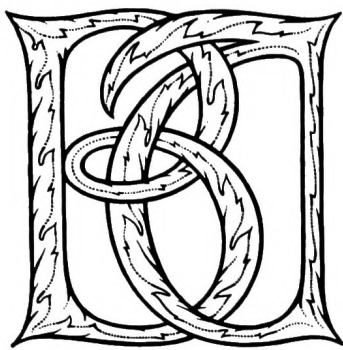


PLATE XVIII—BQ, BR, BS



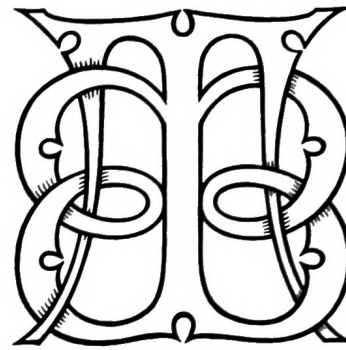




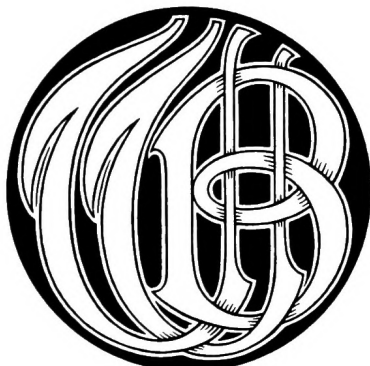
BT



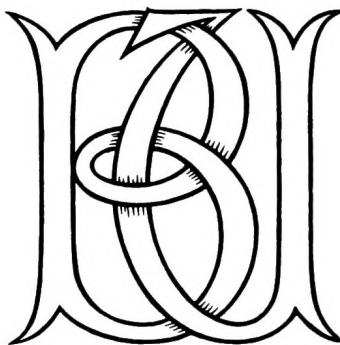
TB



BBT



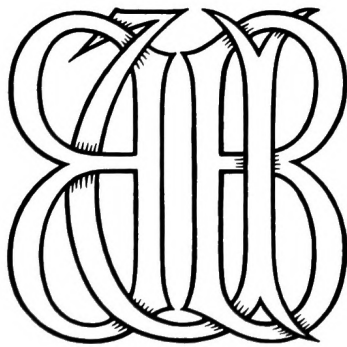
TTB



BU



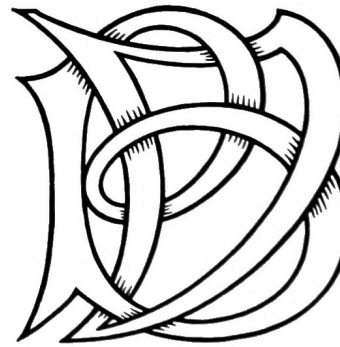
UB



BBU



UUB



BV



PLATE XIX—BT, BU, BV



VB



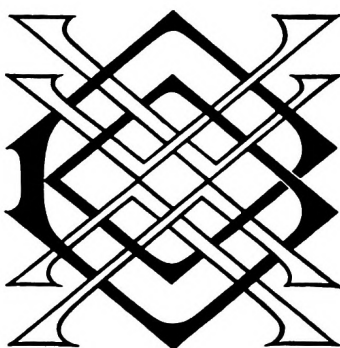
BBV



BW



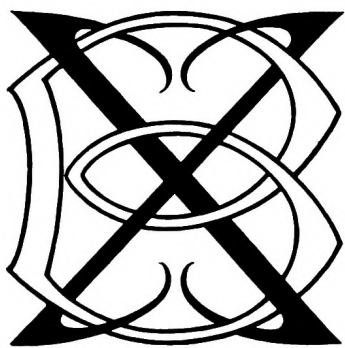
WB



WWB



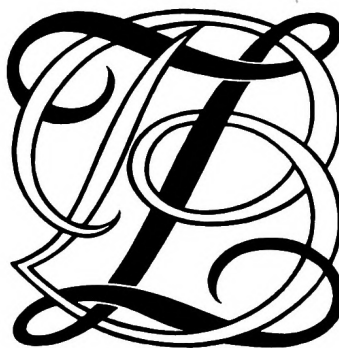
BBW



BX



BY



BZ



PLATE XX—BV, BW, BX, BY, BZ







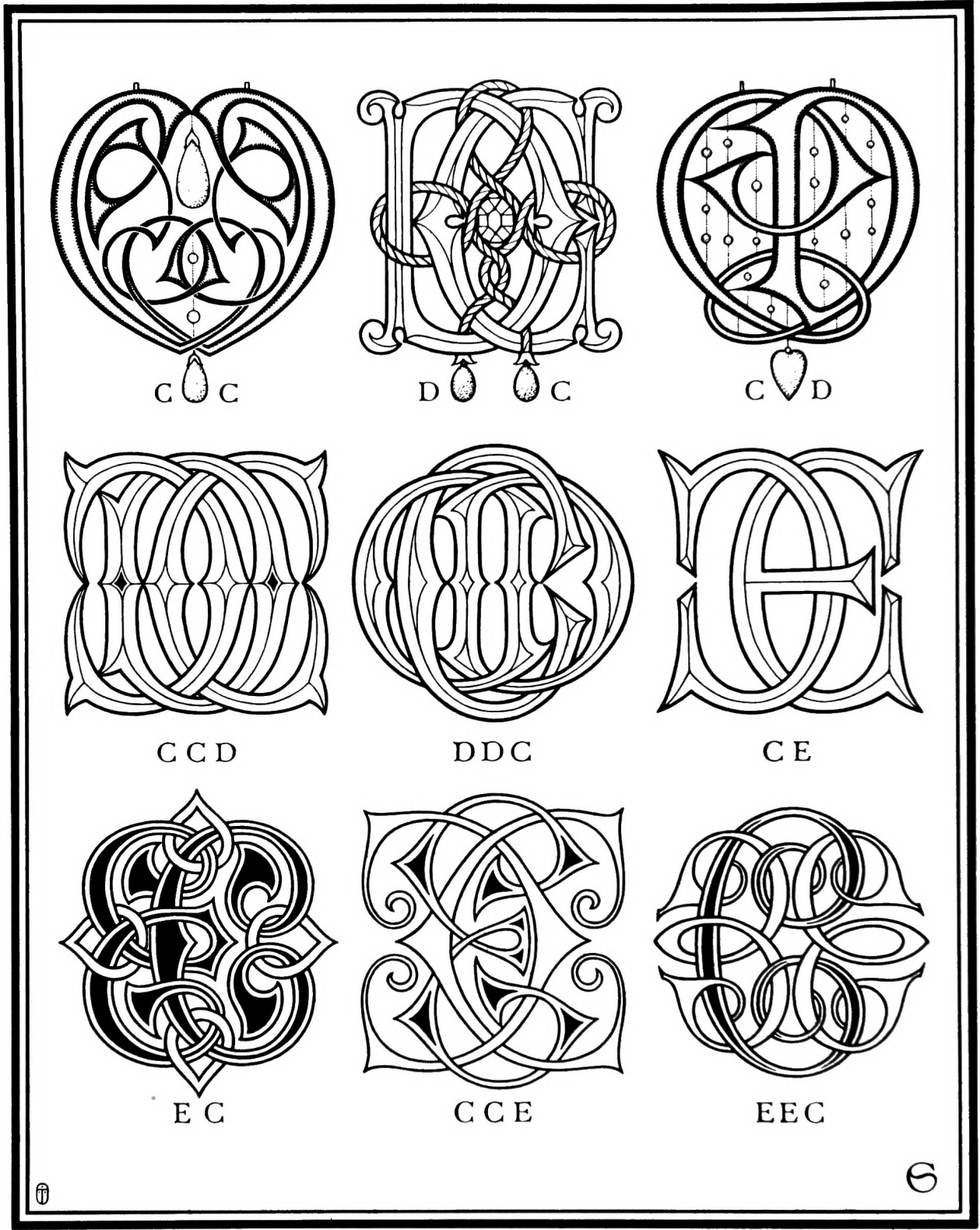
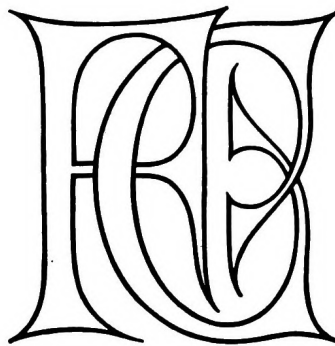


PLATE XXI—CC, CD, CE



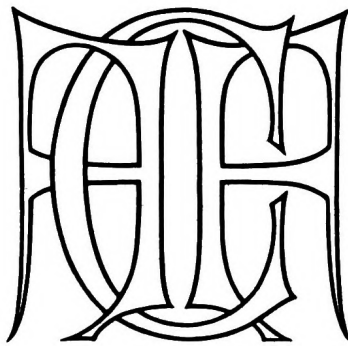
CF



FC



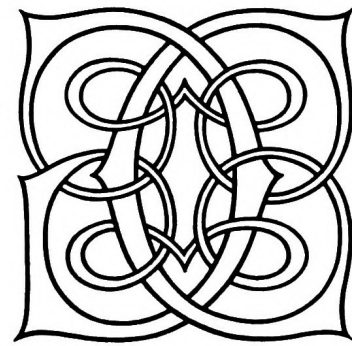
CCF



FFC



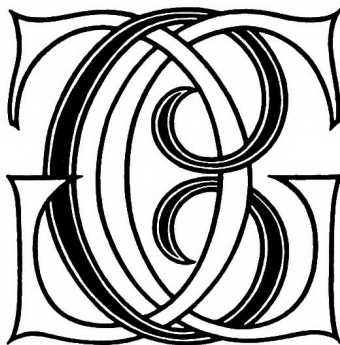
CG



GC



CCG



GGC



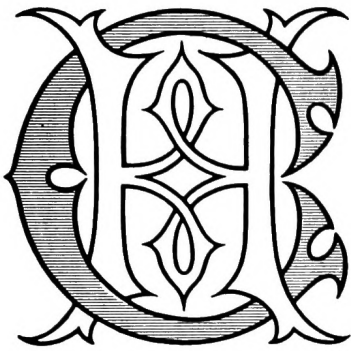
CH



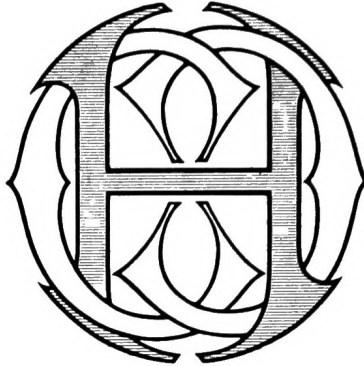
PLATE XXII—CF, CG, CH







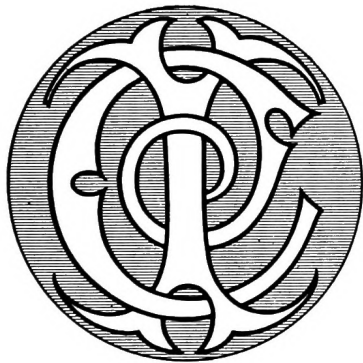
HC



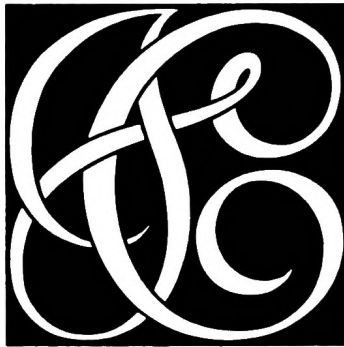
CCH



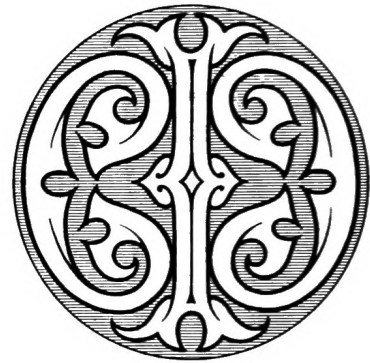
HHC



CI



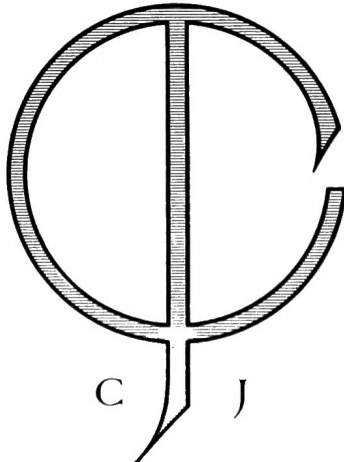
IC



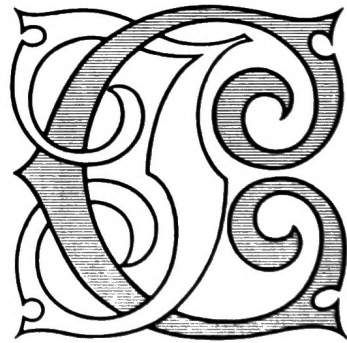
CCI



IIC



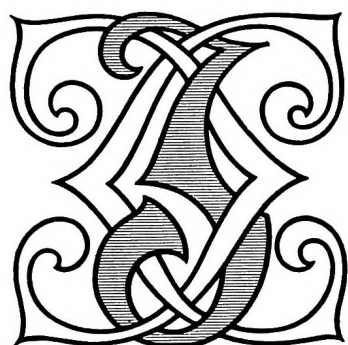
C J



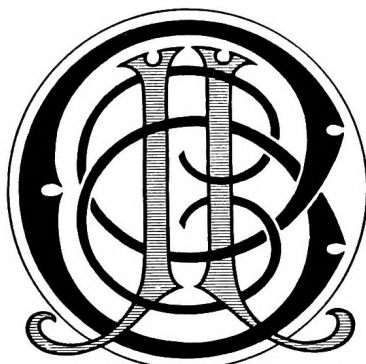
JC



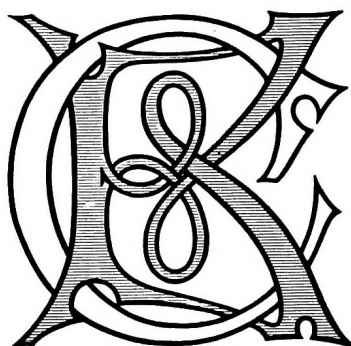
PLATE XXIII—CI, CI, CJ



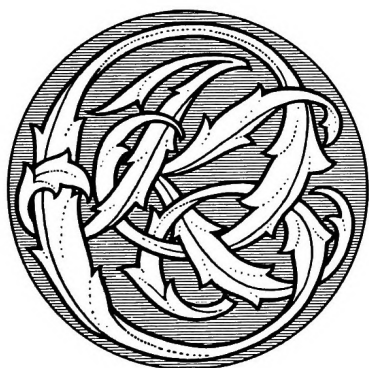
CCJ



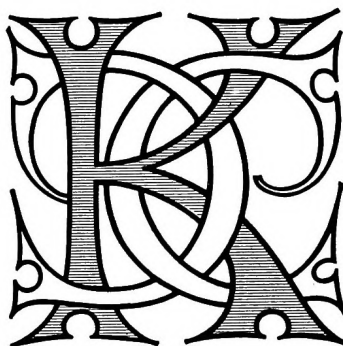
JJC



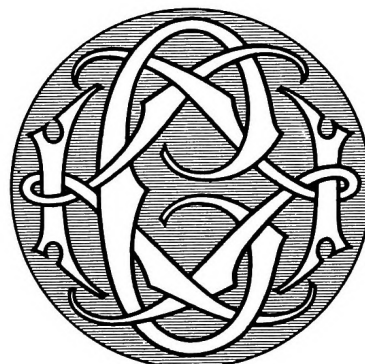
CK



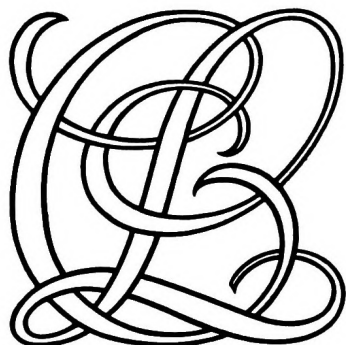
KC



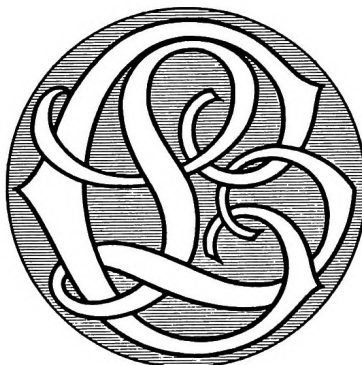
CCK



KKC



CL



LC



CCL

11

6

PLATE XXIV—CJ, CK, CL

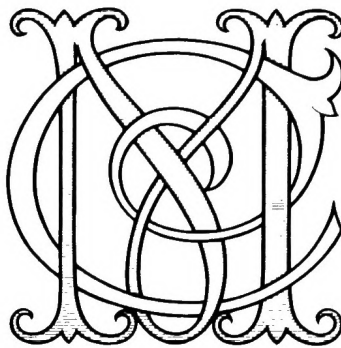








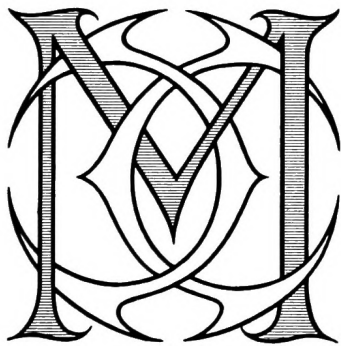
LLC



CM



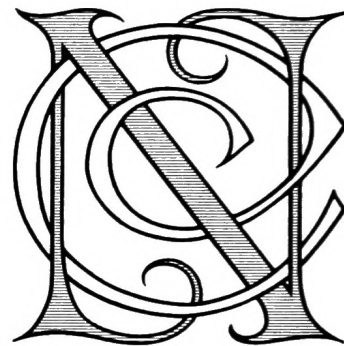
MC



CCM



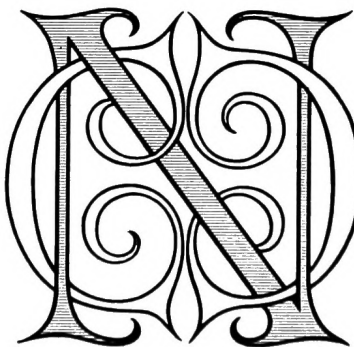
MMC



CN



NC



CCN

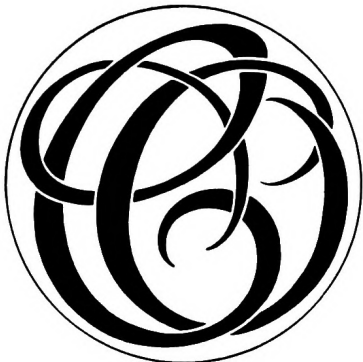


NNC

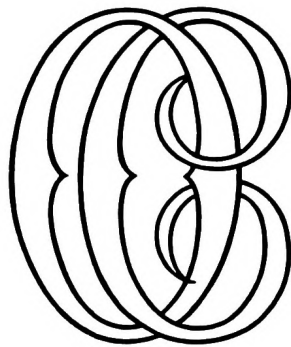
⓪

Ⓢ

PLATE XXV—CL, CM, CN



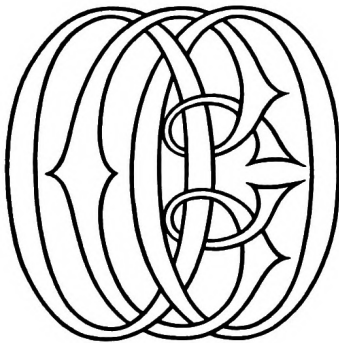
CO



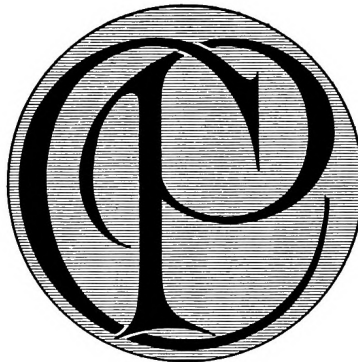
OC



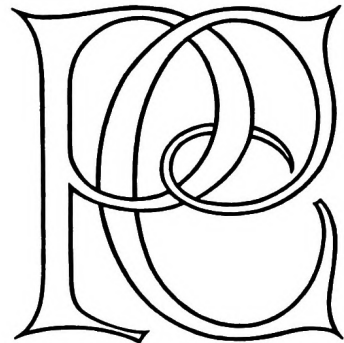
CCO



OOC



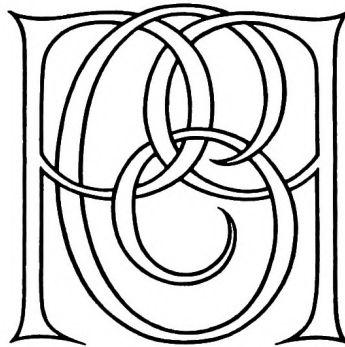
CP



PC



CCP



PPC



CQ

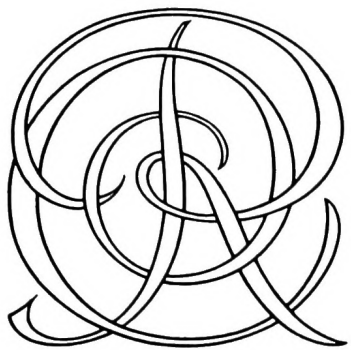
①

⑥

PLATE XXVI—CO, CP, CQ







CR



RC



CCR



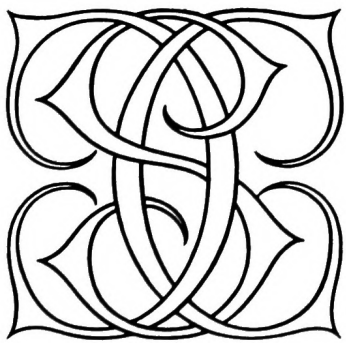
RRC



CS



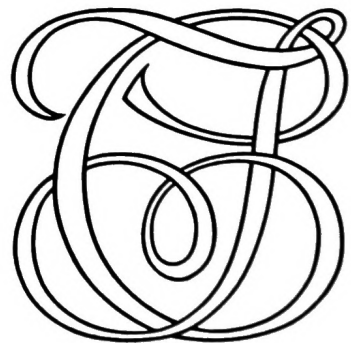
SC



CCS



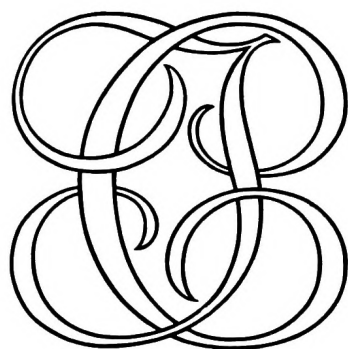
SSC



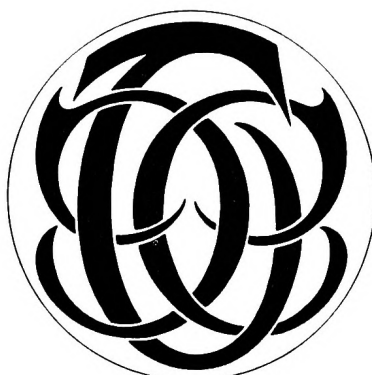
CT



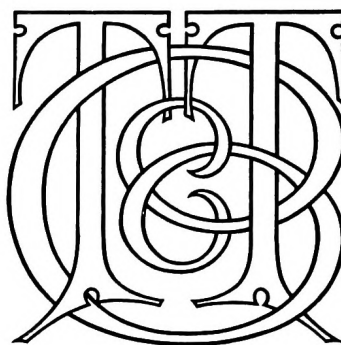
PLATE XXVII--CR, CS, CT



TC



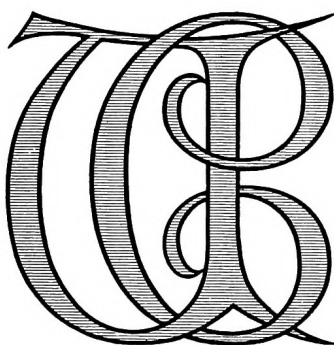
CCT



TTC



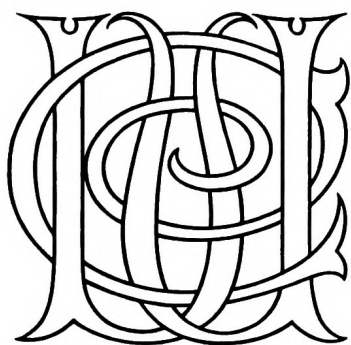
CU



UC



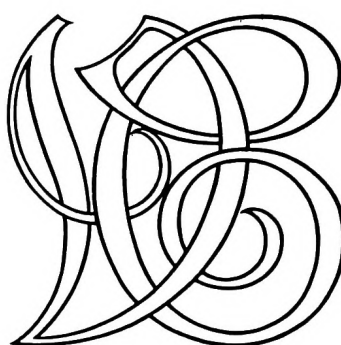
CCU



UUC



CV



VC

⑩

⑥

PLATE XXVIII—CT, CU, CV

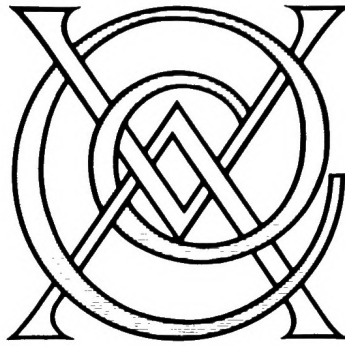








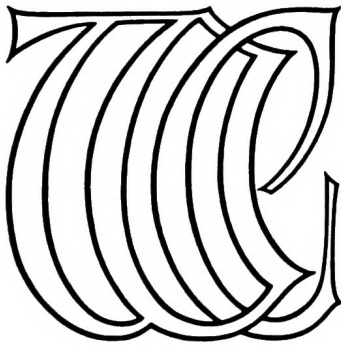
CCV



VVC



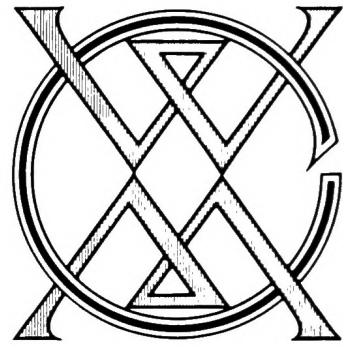
CW



WC



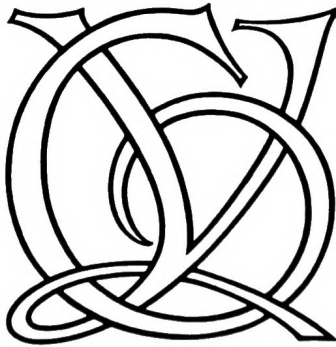
CCW



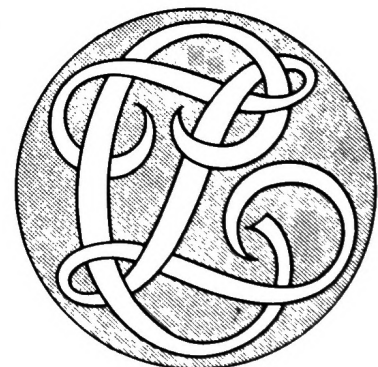
WWC



CX



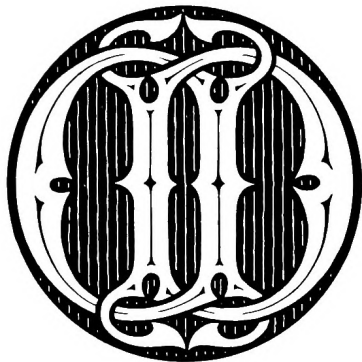
CY



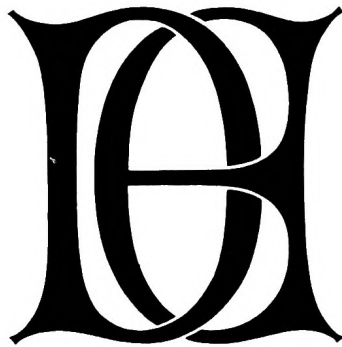
CZ



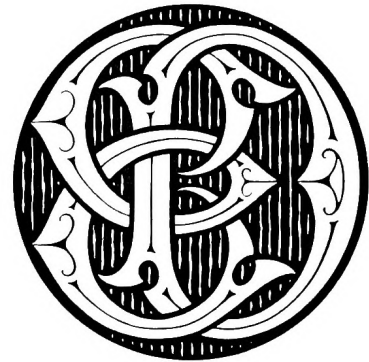
PLATE XXIX—CV, CW, CX, CY, CZ



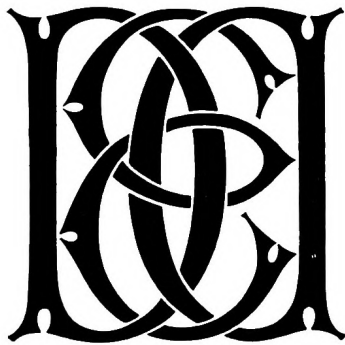
DD



DE



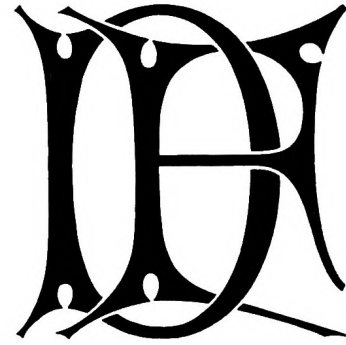
ED



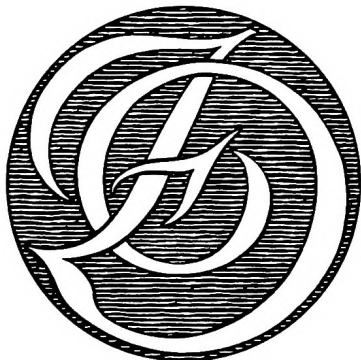
DDE



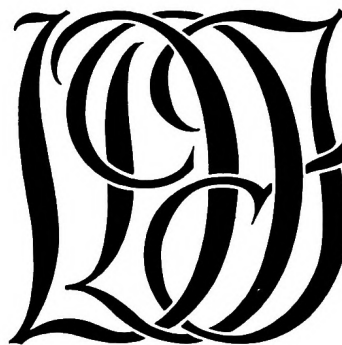
EED



DF



FD



DDF



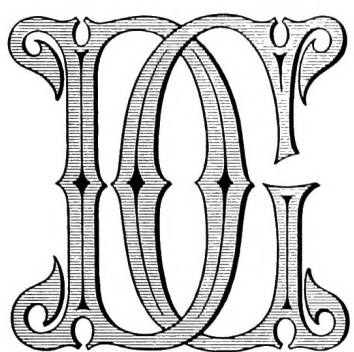
FFD



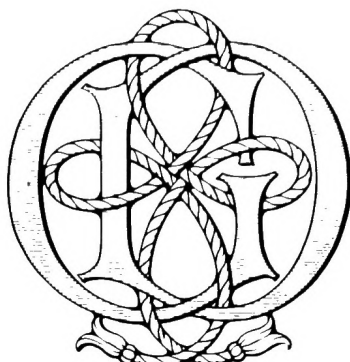
PLATE XXX—DD, DE, DF



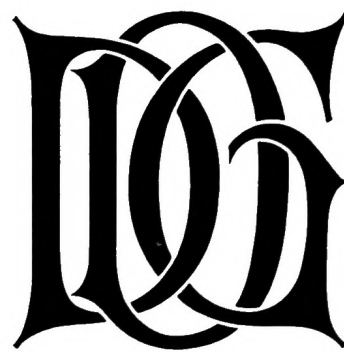




DG



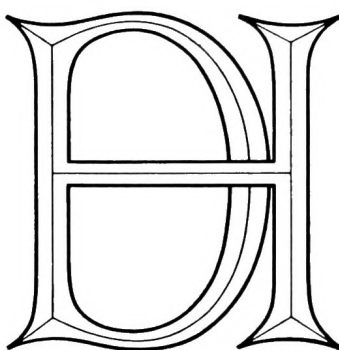
GD



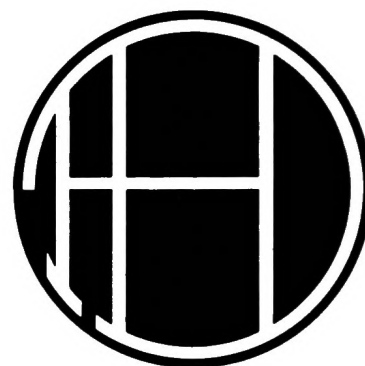
DDG



GGD



DH



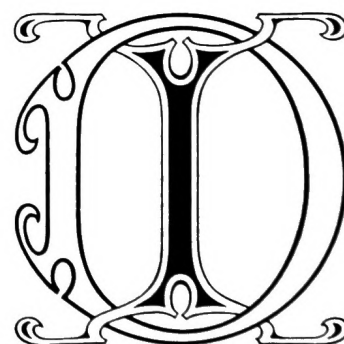
HD



DDH



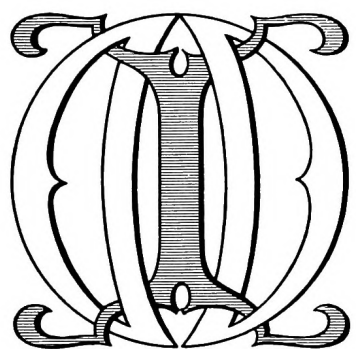
HHD



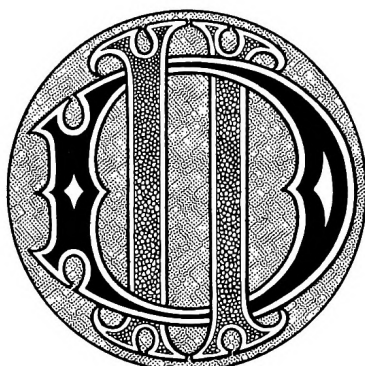
DI



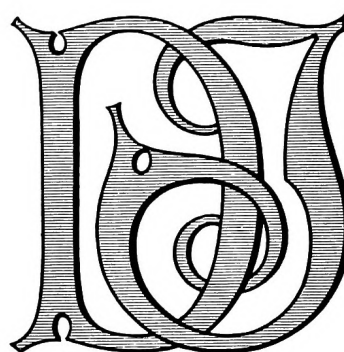
PLATE XXXI—DG, DH, DI



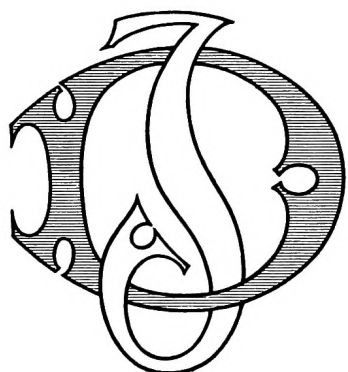
DDI



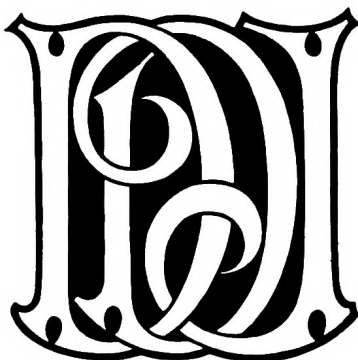
IID



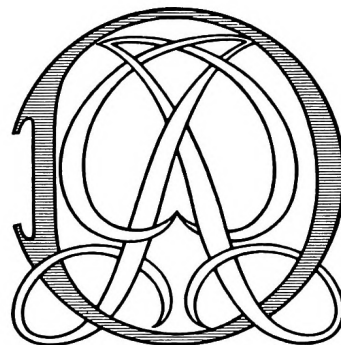
DJ



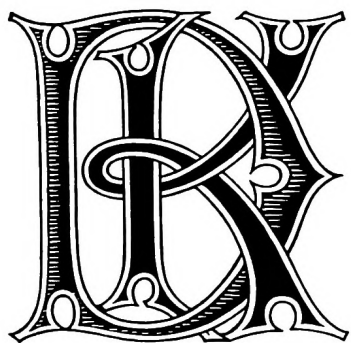
JD



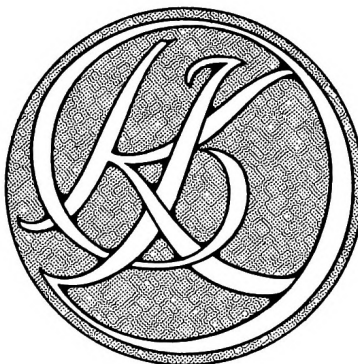
DDJ



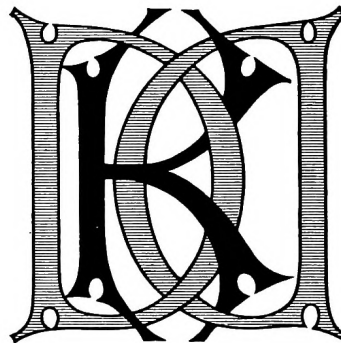
JJD



DK



KD



DDK



PLATE XXXII—DI, DJ, DK

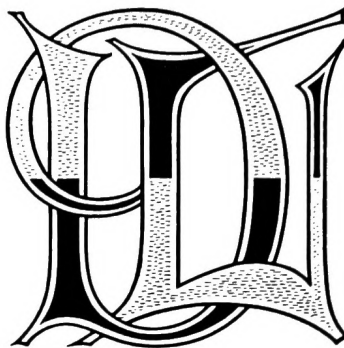








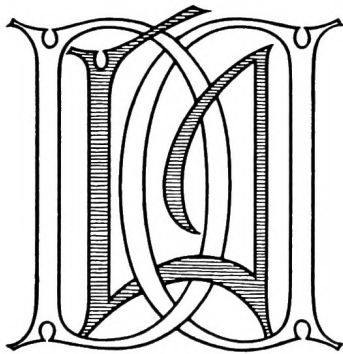
KKD



DL



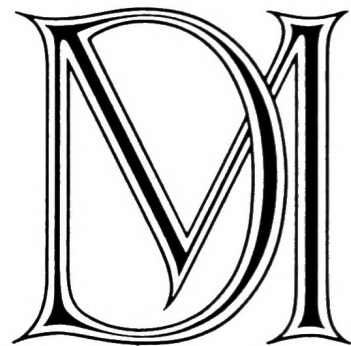
LD



DDL



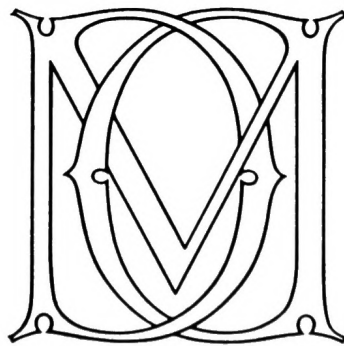
LLD



DM



MD



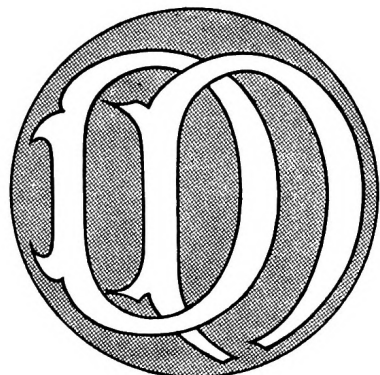
DDM



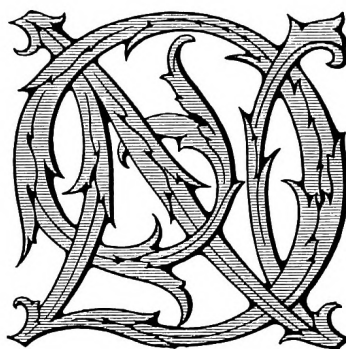
MMD



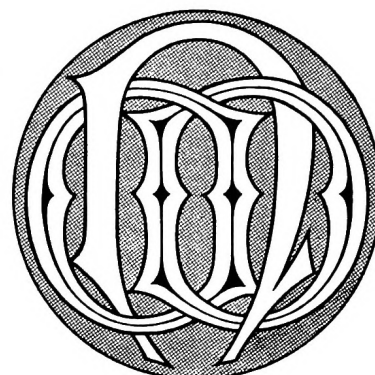
PLATE XXXIII - DK, DL, DM



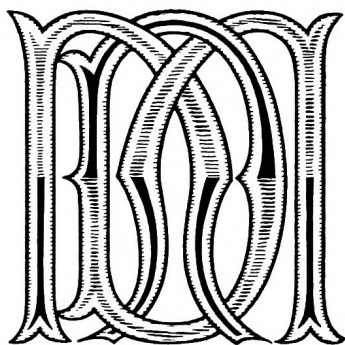
DN



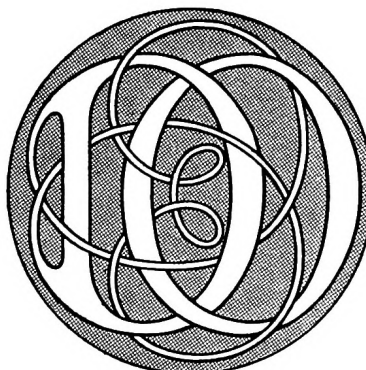
ND



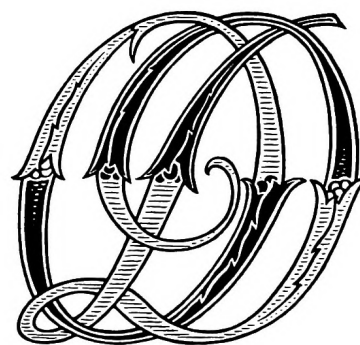
DDN



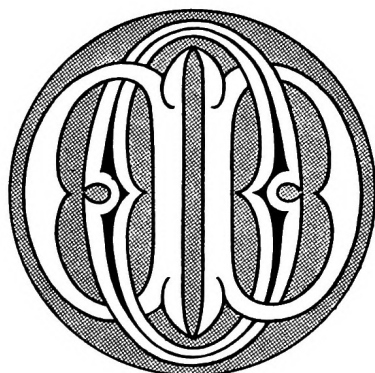
NND



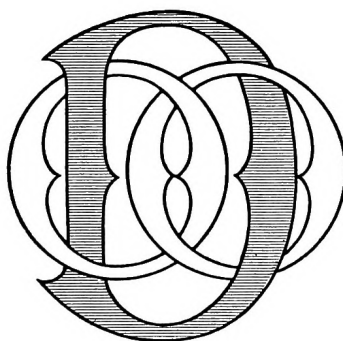
DO



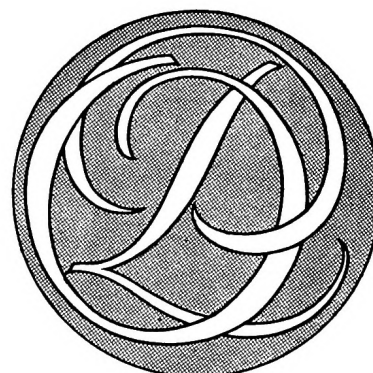
OD



DDO



OOD



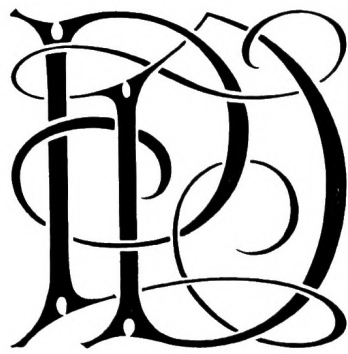
DP



PLATE XXXIV—DN, DO, DP







PD



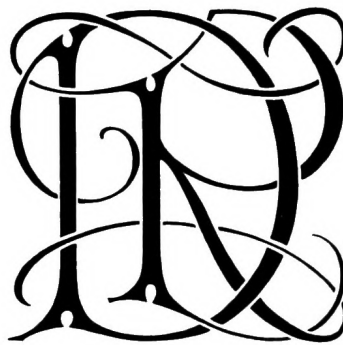
DDP



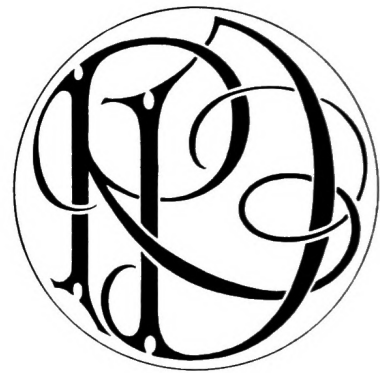
PPD



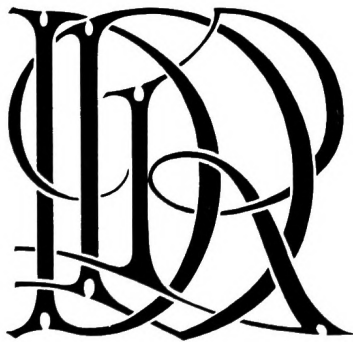
DQ



DR



RD



DDR



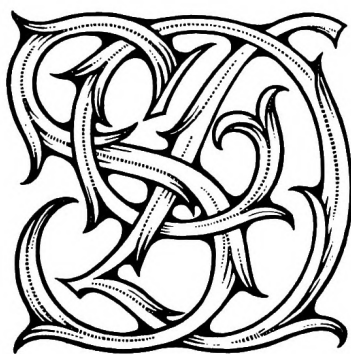
RRD



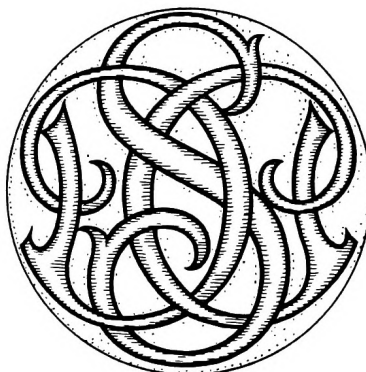
DS



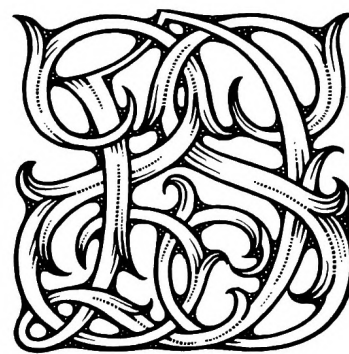
PLATE XXXV—DP, DQ, DR, DS



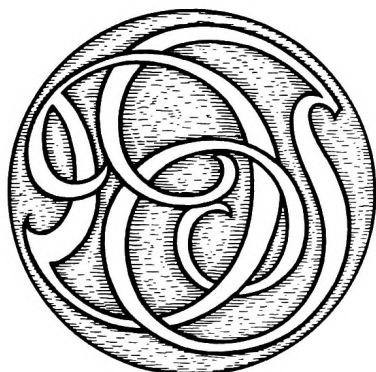
SD



DDS



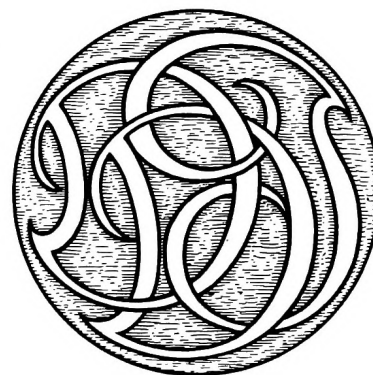
SSD



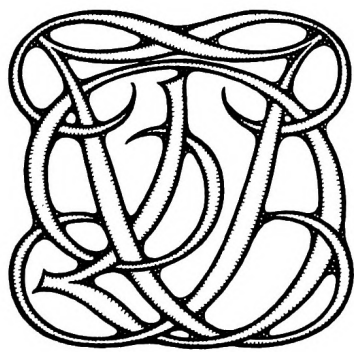
DT



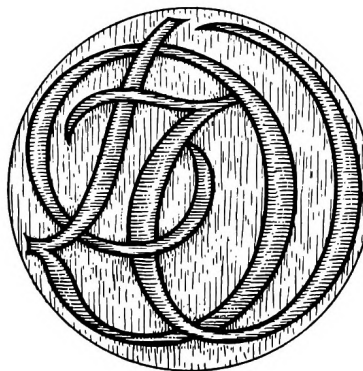
TD



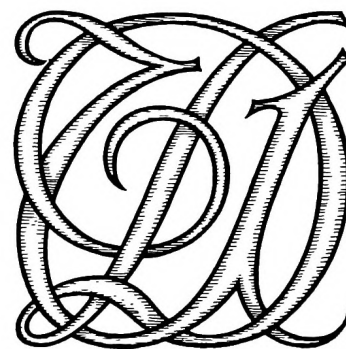
DDT



TTD



DU



UD



PLATE XXXVI—DS, DT, DU

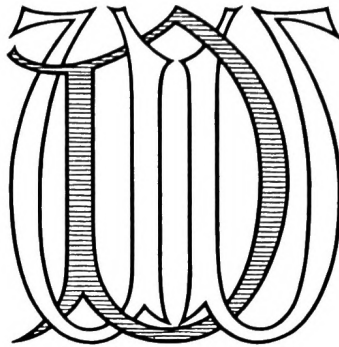








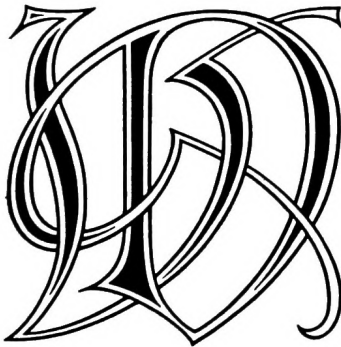
DDU



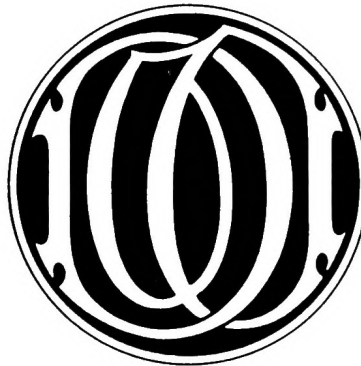
UUD



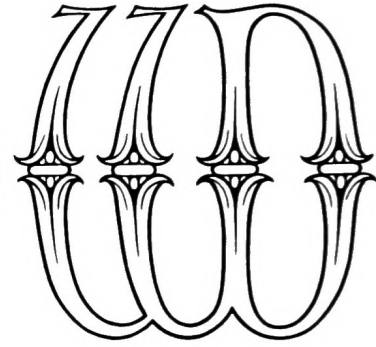
DV



VD



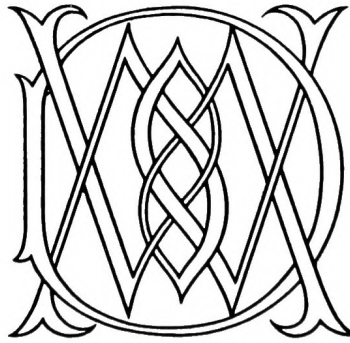
DW



WD



DDW



WWD



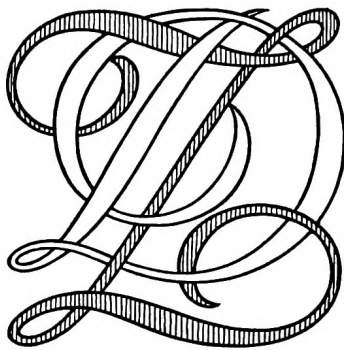
DX



PLATE XXXVII—DU, DV, DW, DX



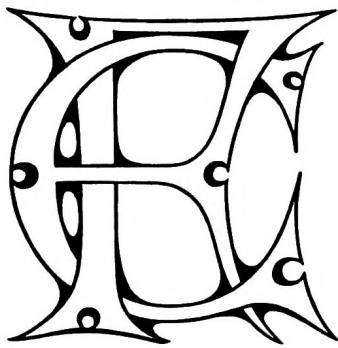
DY



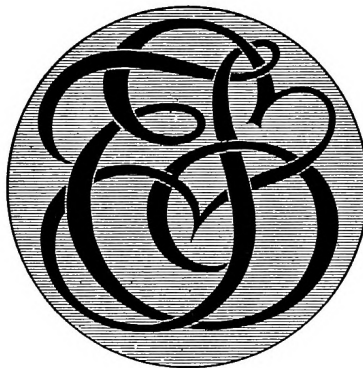
DZ



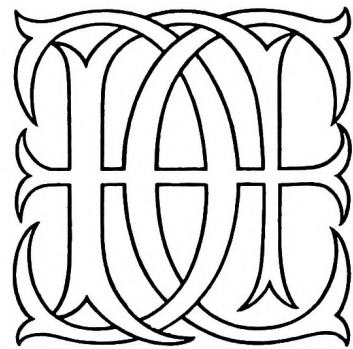
EE



EF



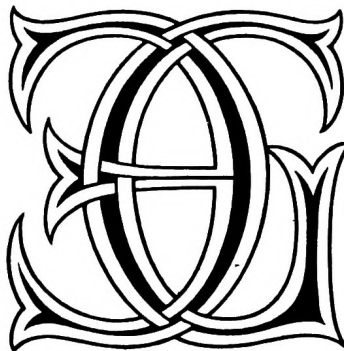
FE



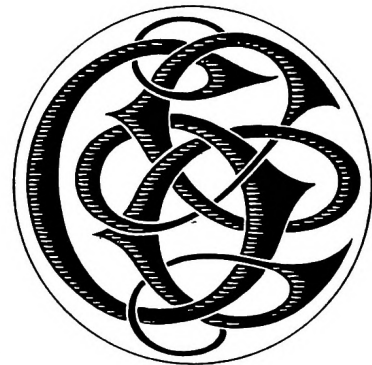
EEF



FFE



EG



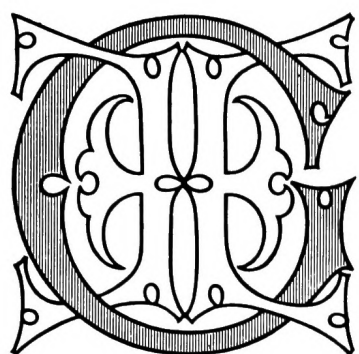
GE



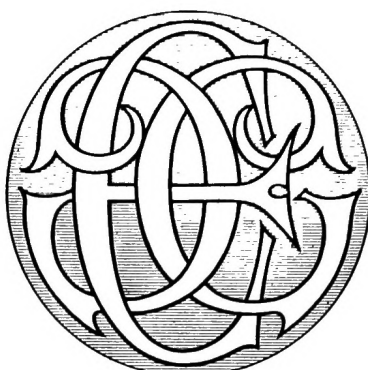
PLATE XXXVIII—DY, DZ, EE, EF, EG



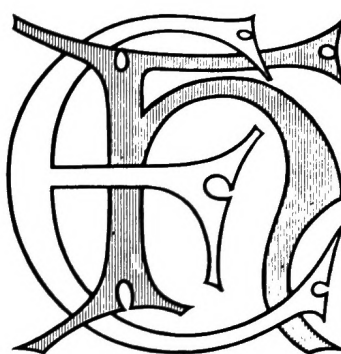




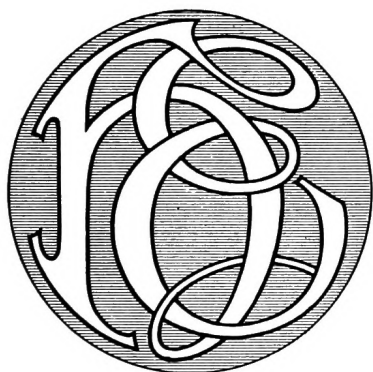
EEG



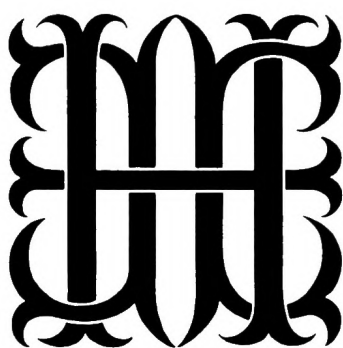
GGE



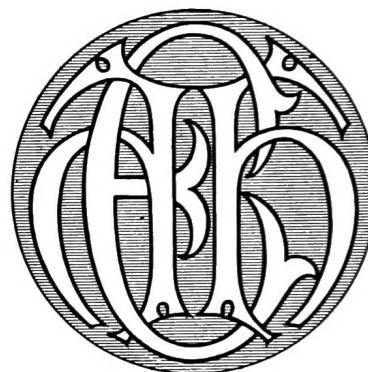
EH



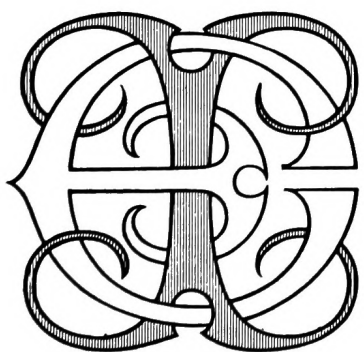
HE



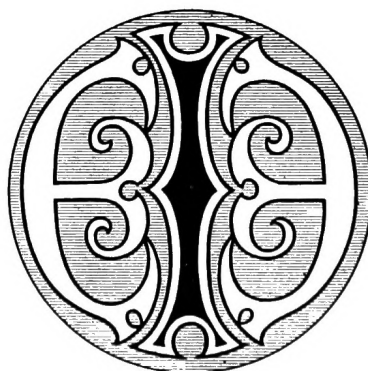
EEH



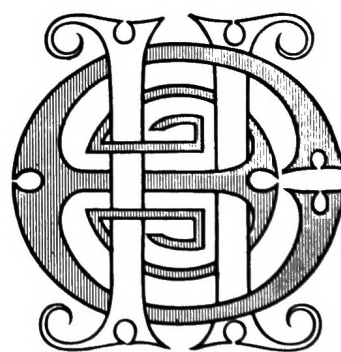
HHE



EI



EEI

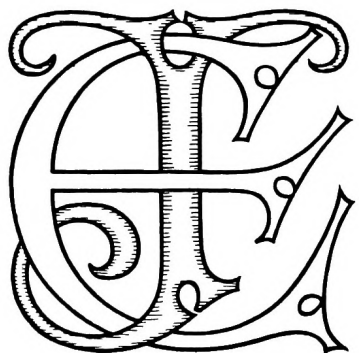


IIE

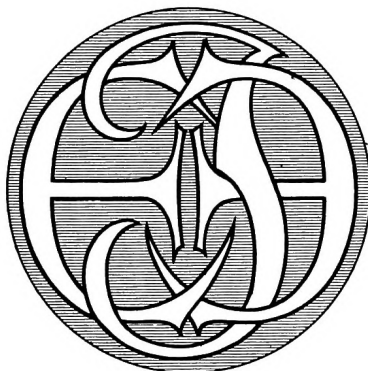
Ⓢ

Ⓢ

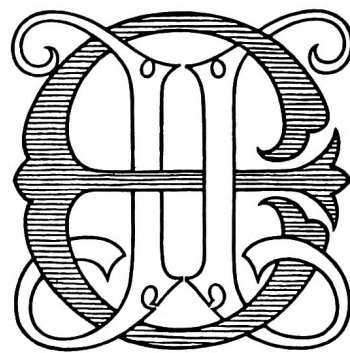
PLATE XXXIX—EG, EH, EI



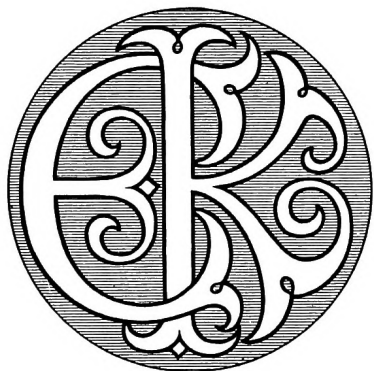
EJ



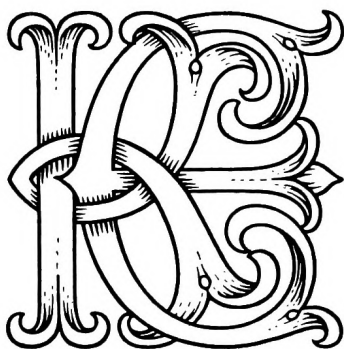
EEJ



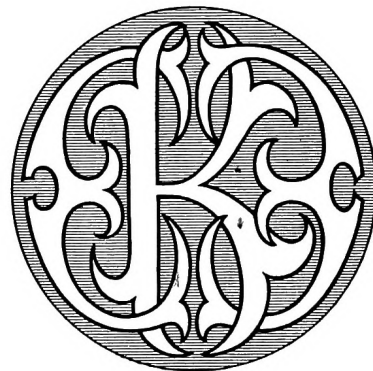
JJE



EK



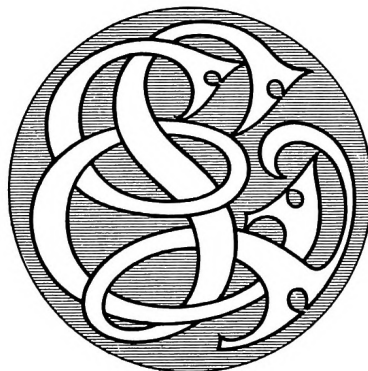
KE



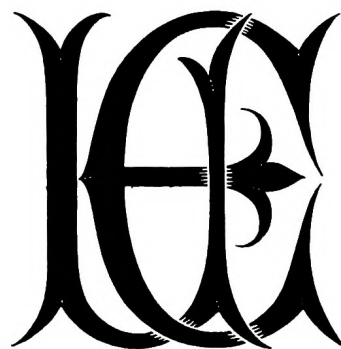
EEK



KKE



EL



LE



PLATE XL—EJ, EK, EL

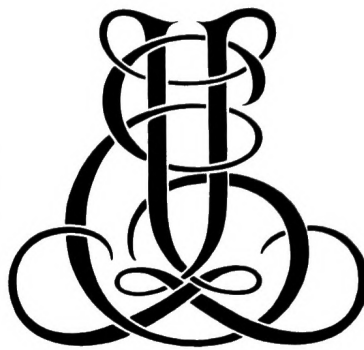








EEL



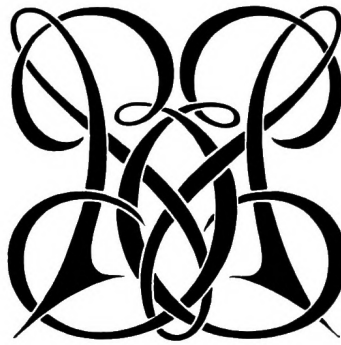
LLE



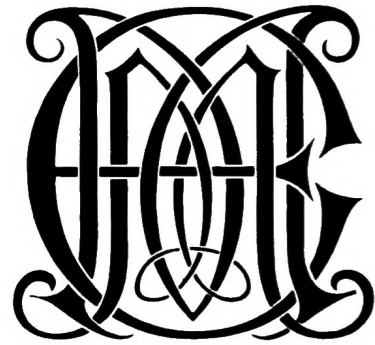
EM



ME



EEM



MME



EN



NE



EEN

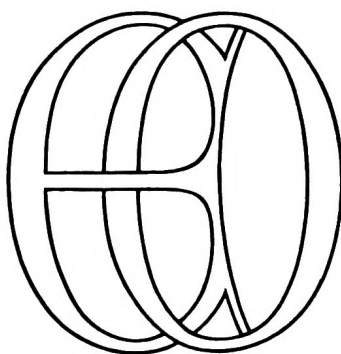
Ⓟ

Ⓠ

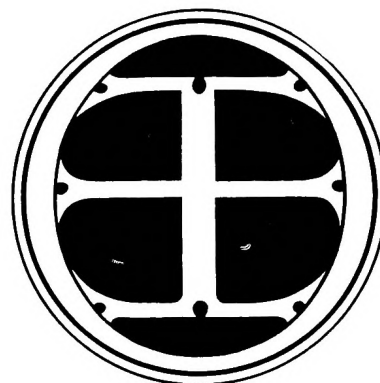
PLATE XLI—EL, EM, EN



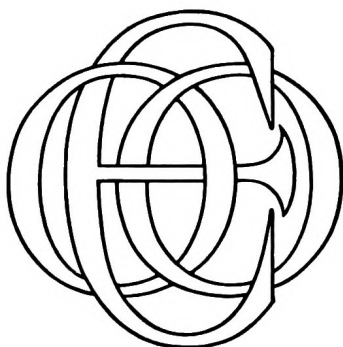
NNE



EO



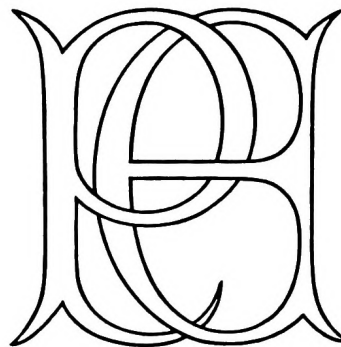
EEO



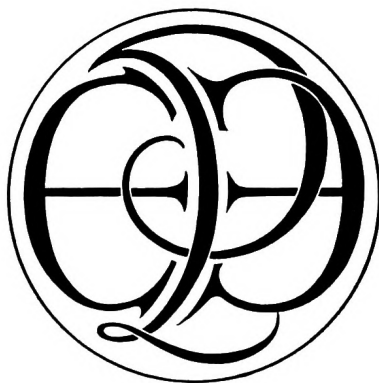
OOE



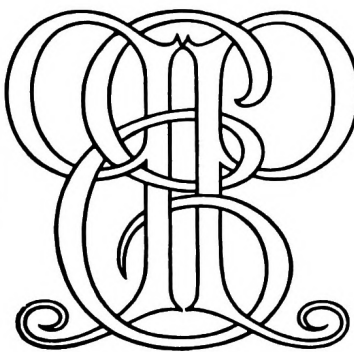
EP



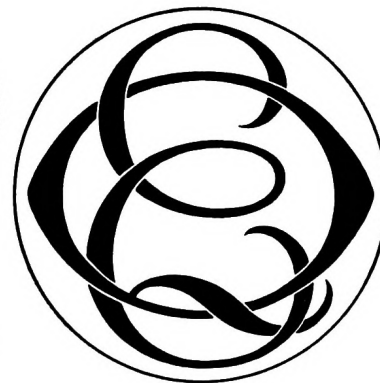
PE



EEP



PPE



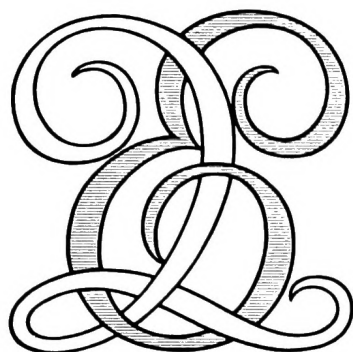
EQ



PLATE XLII—EN, EO, EP, EQ



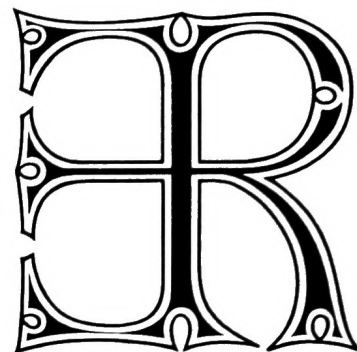




QE



ER



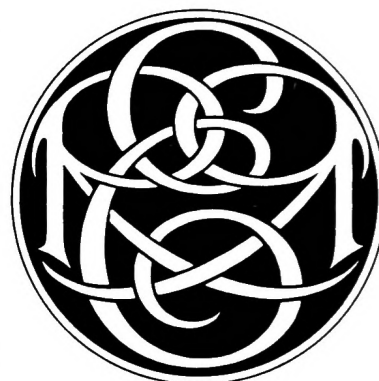
ER



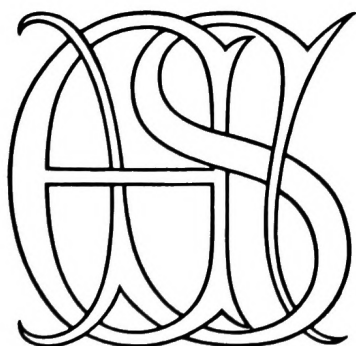
RE



EER



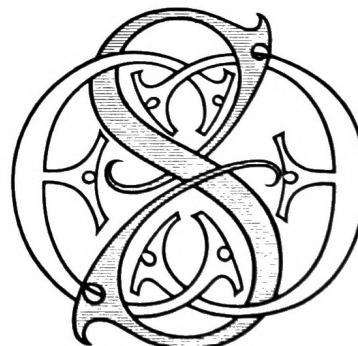
RRE



ES



SE



EES



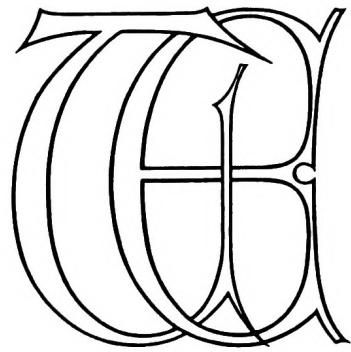
PLATE XLIII—EQ, ER, ES



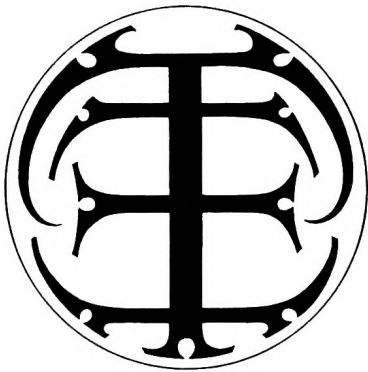
SSE



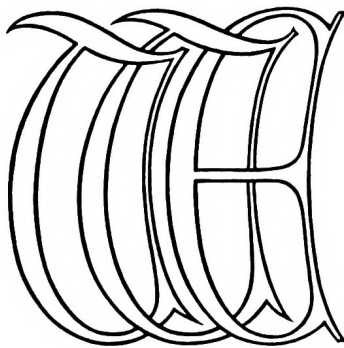
ET



TE



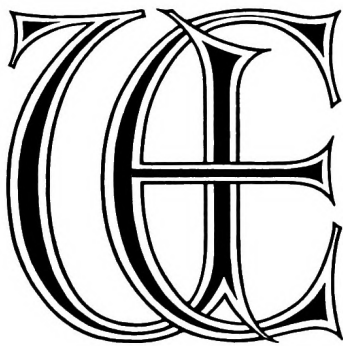
EET



TTE



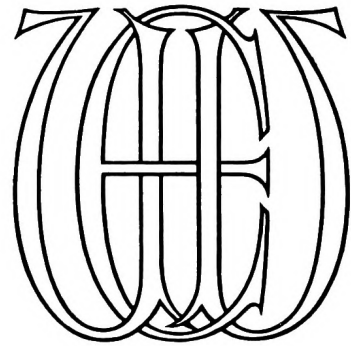
EU



UE



EEU



UUE



PLATE XLIV—ES, ET, EU

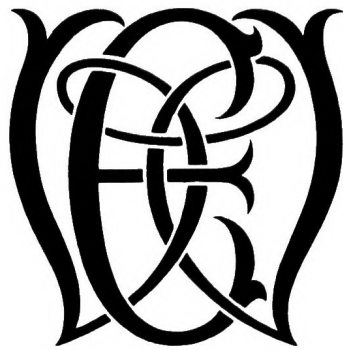








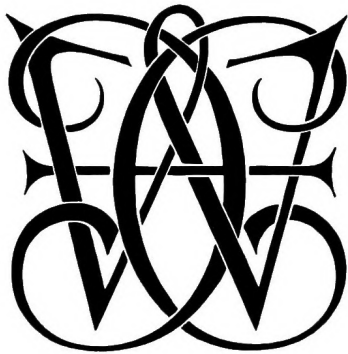
EV



EW



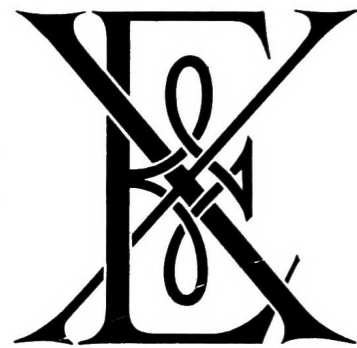
WE



EEW



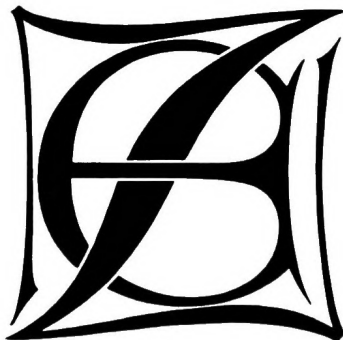
WWE



EX



EY



EZ



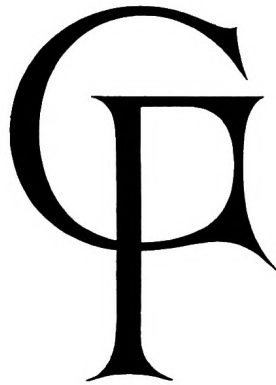
FF



PLATE XLV—EV, EW, EX, EY, EZ, FF



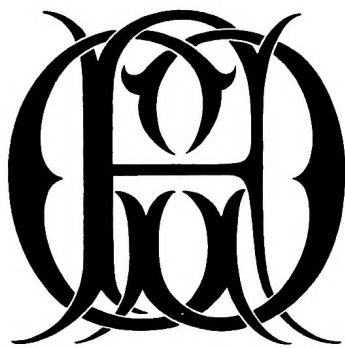
FG



GF



FFG



GGF



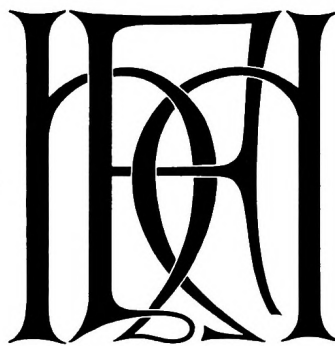
FH



HF



FFH



HHF



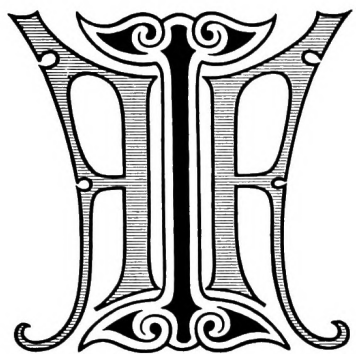
FI



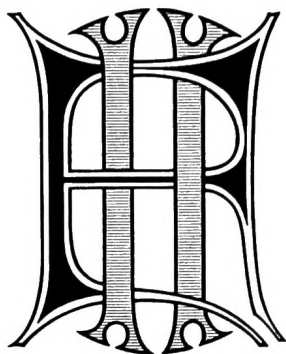
PLATE XLVI—FG, FH, FI



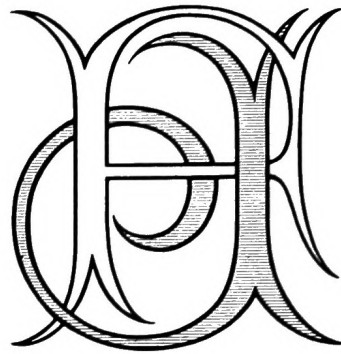




FFI



IIF



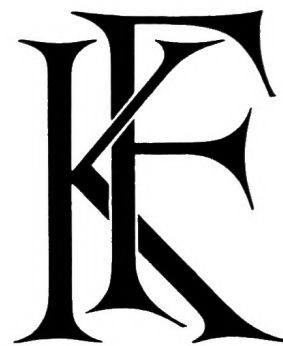
FJ



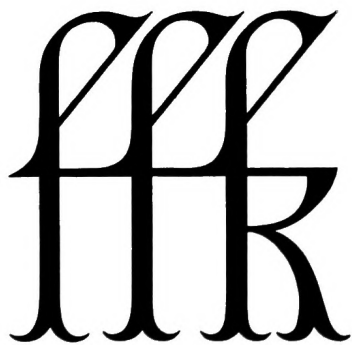
JF



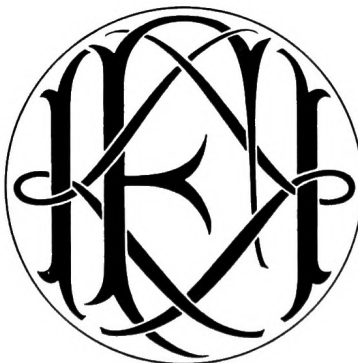
FK



KF



FFK



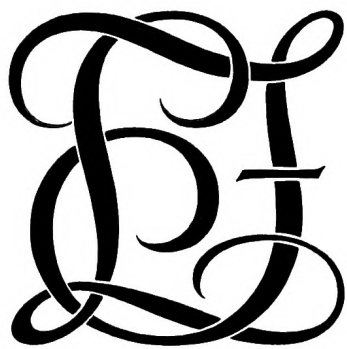
KKF



FL



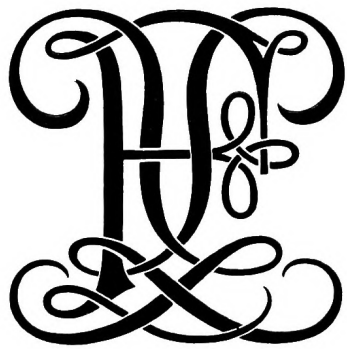
PLATE XLVII—FI, FJ, FK, FL



LF



FFL



LLF



FM



MF



FFM



MMF



FN



NF



PLATE XLVIII—FL, FM, FN

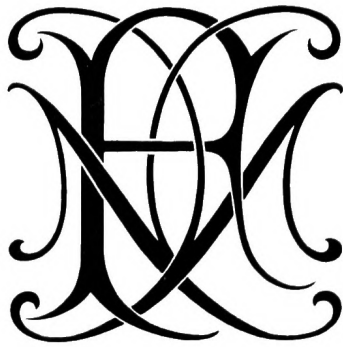




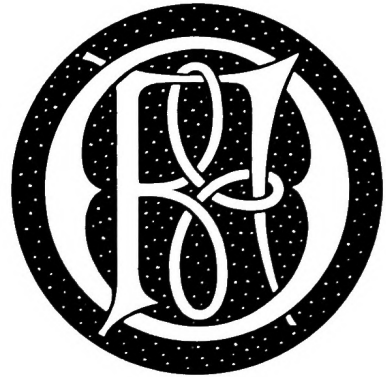




FFN



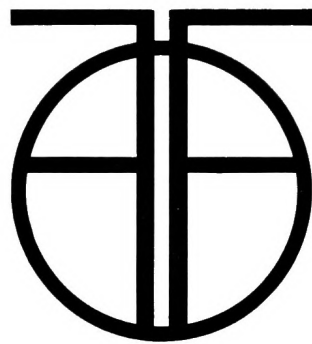
NNF



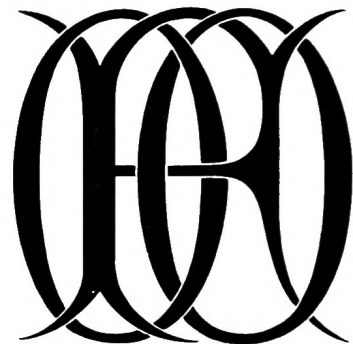
FO



OF



FFO



OOF



FP



PF



FFP



PLATE XLIX FN, FO, FP



PPF



FQ



FR



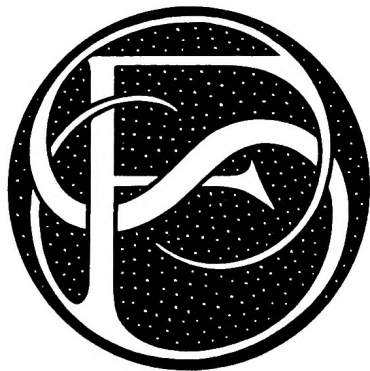
RF



FFR



RRF



FS



SF



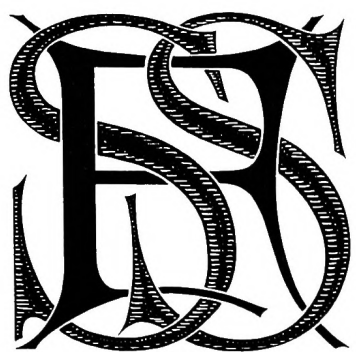
FFS



PLATE L—FP, FQ, FR, FS



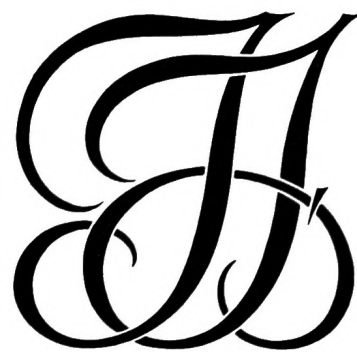




SSF



FT



TF



FFT



TTF



FU



UF



FFU



UUF



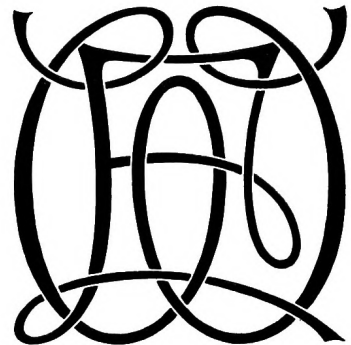
PLATE LI—FS, FT, FU



FV



VF



FW



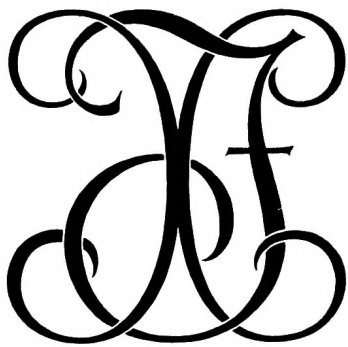
WF



FFW



WWF



FX



FY



FZ



PLATE LII—FV, FW, FX, FY, FZ









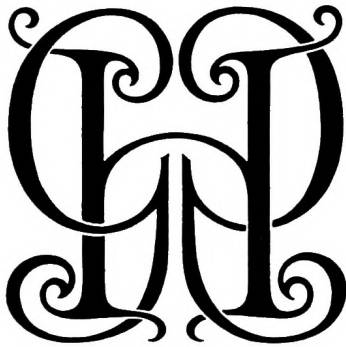
GG



GH



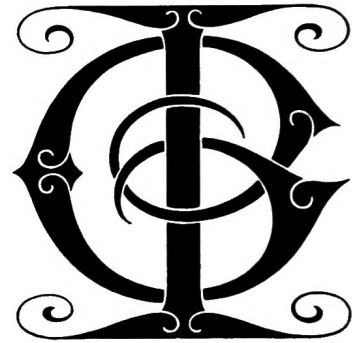
HG



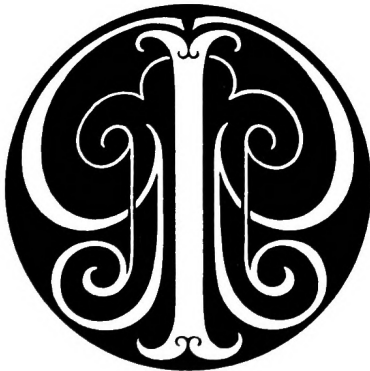
GGH



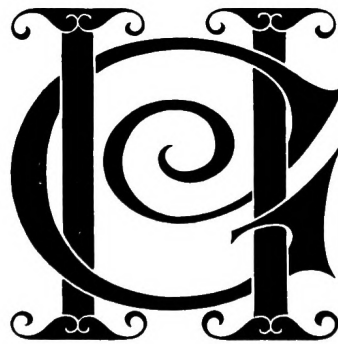
HHG



GI



GGI



IIG



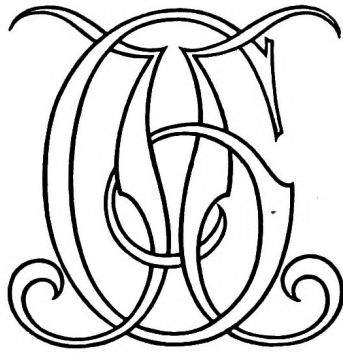
GJ



PLATE LIII—GG, GH, GI, GJ



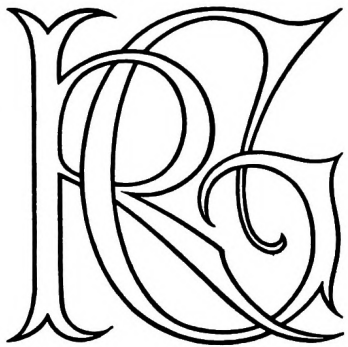
G GJ



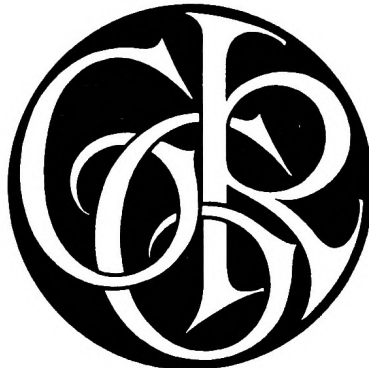
JJG



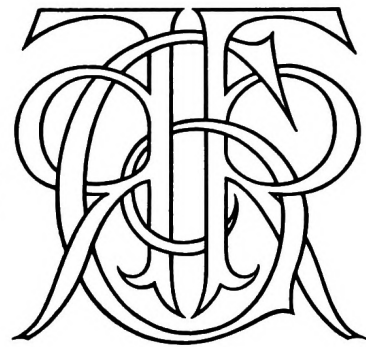
GK



KG



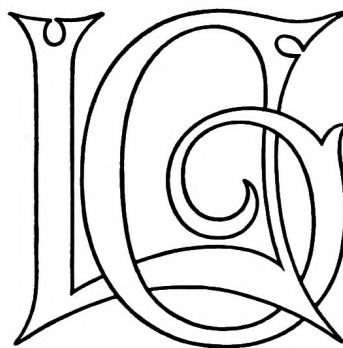
GGK



KKG



GL



LG



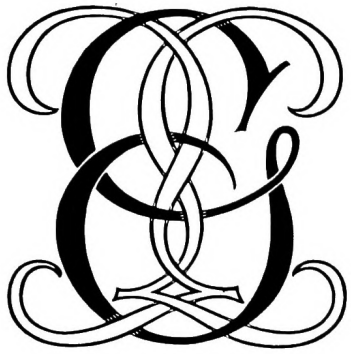
GGL



PLATE LIV—GJ, GK, GL







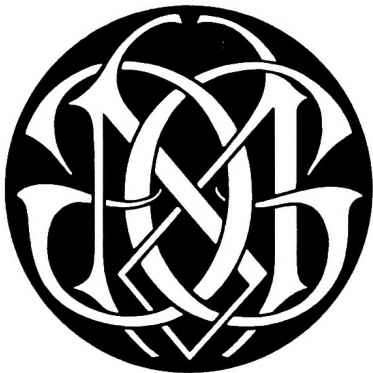
LLG



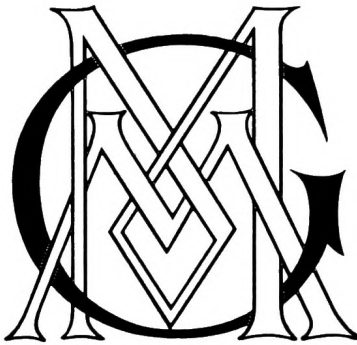
GM



MG



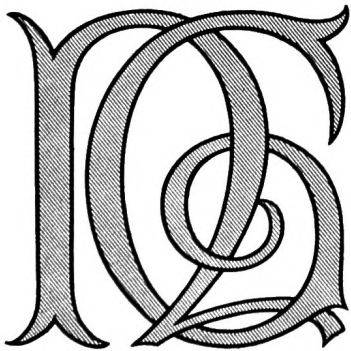
GGM



MMG



GN



NG



GGN



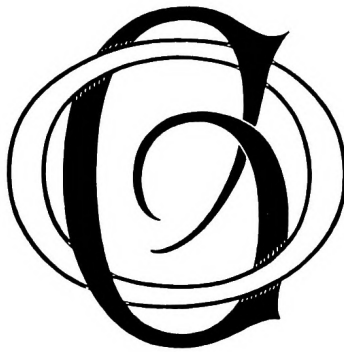
NNG



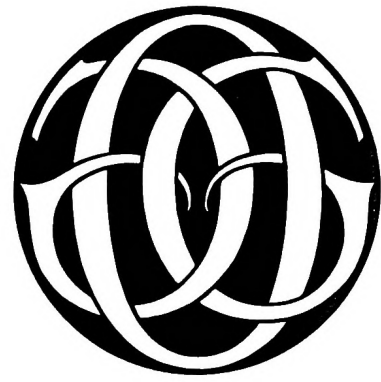
PLATE LV—GL, GM, GN



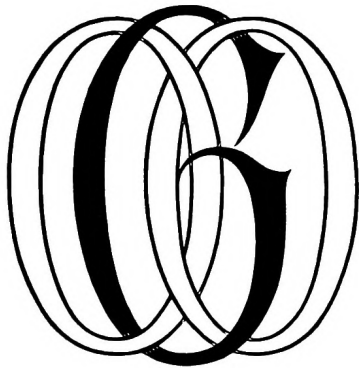
GO



OG



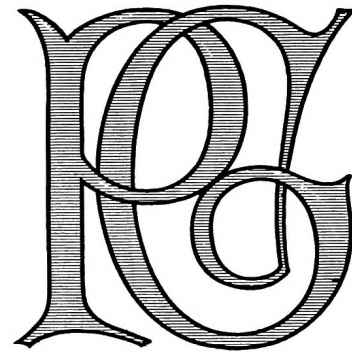
GGO



OOG



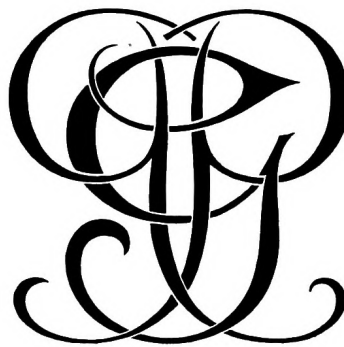
GP



PG



GGP



PPG



GQ

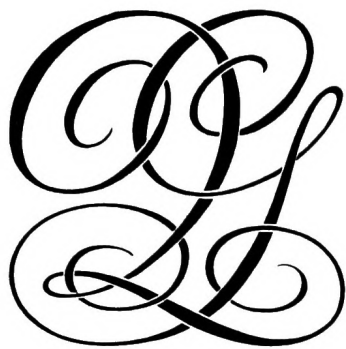


PLATE LVI—GO, GP, GQ





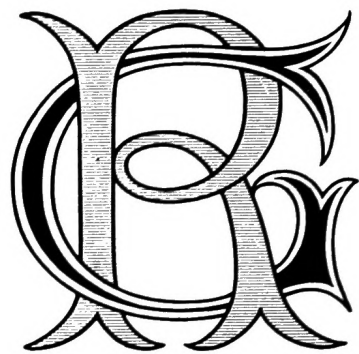




QG



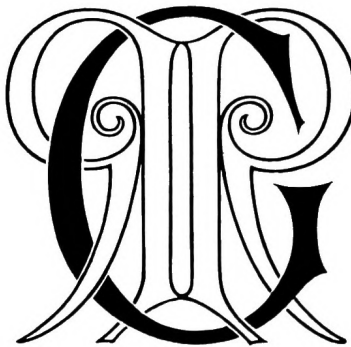
GR



RG



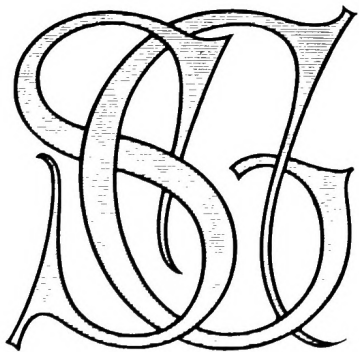
GGR



RRG



GS



SG



GGS



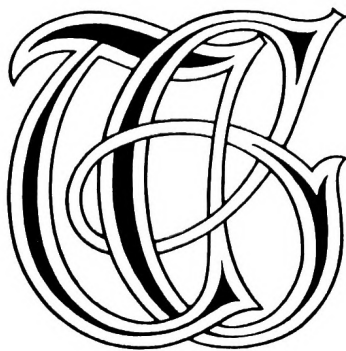
SSG



PLATE LVII—QG, GR, GS



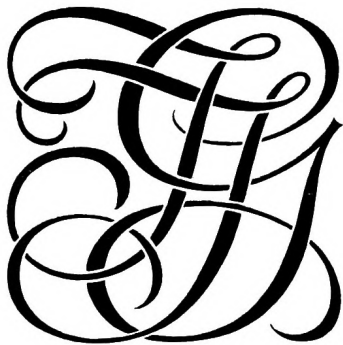
GT



TG



GGT



TTG



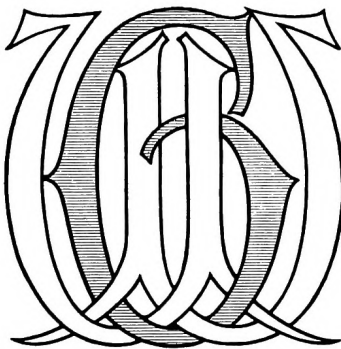
GU



UG



GGU



UUG



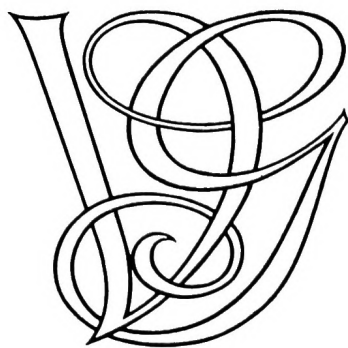
GV



PLATE LVIII—GT, GU, GV



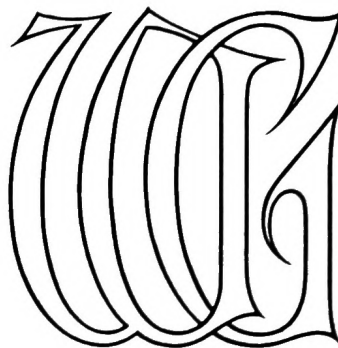




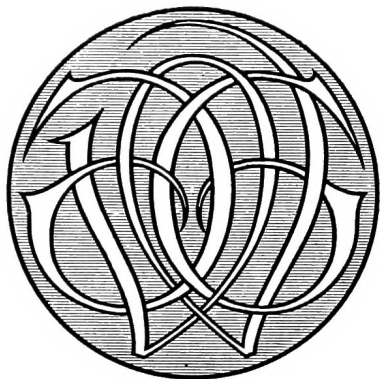
VG



GW



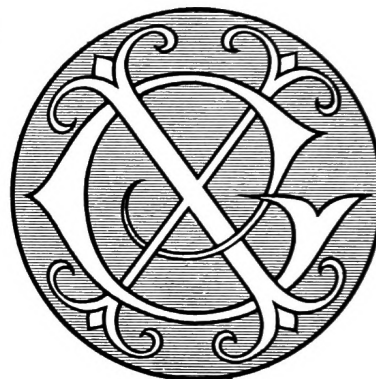
WG



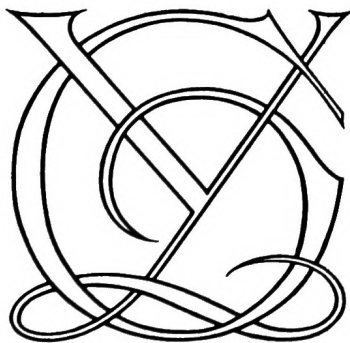
GGW



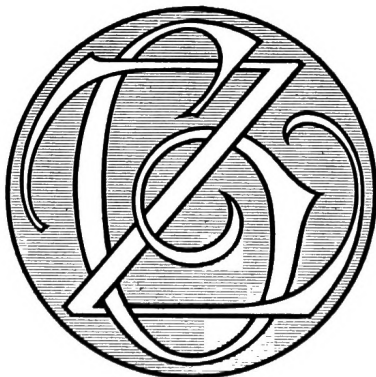
WWG



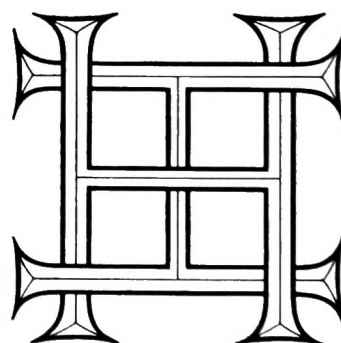
GX



GY



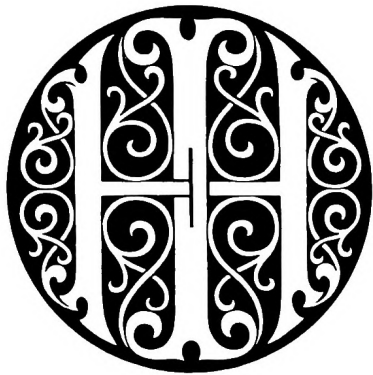
GZ



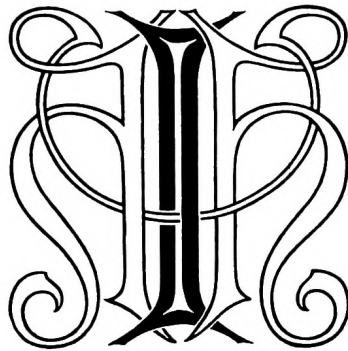
HH



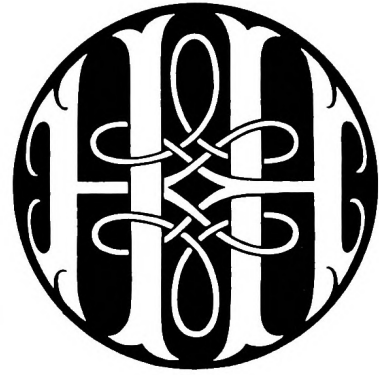
PLATE LIX—GV, GW, GX, GY, GZ, HH



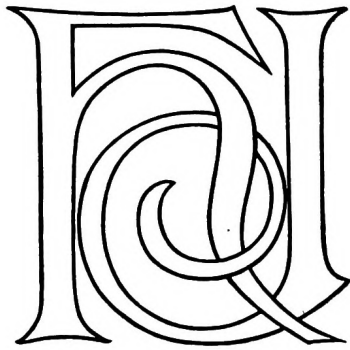
HI



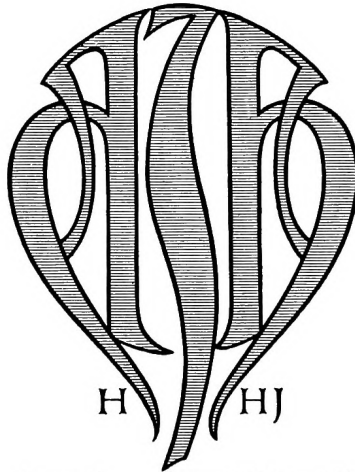
HHI



IHH



HJ



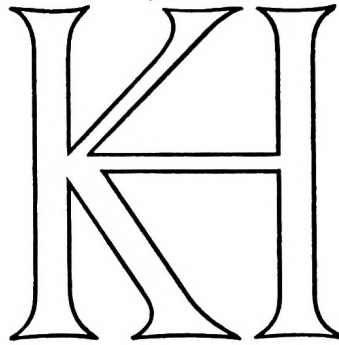
H HJ



JJH



HK



KH



HHK



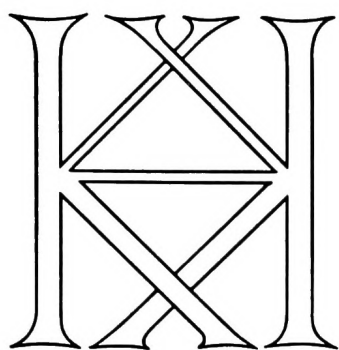
PLATE LX—III, HJ, HK





Digitization Support from  
**MICROSOFT**

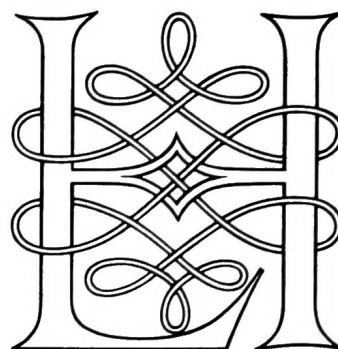
Original from  
**YALE UNIVERSITY**



KKH



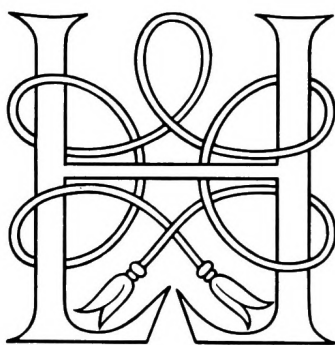
HL



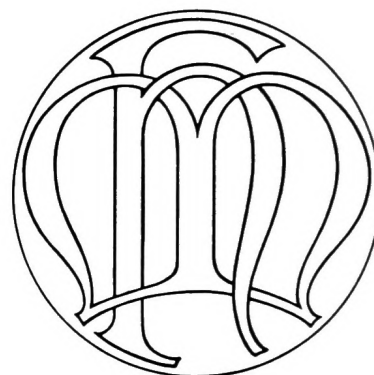
LH



HHL



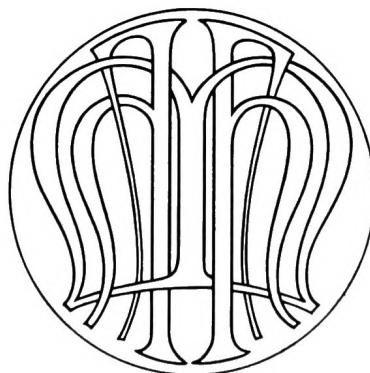
LLH



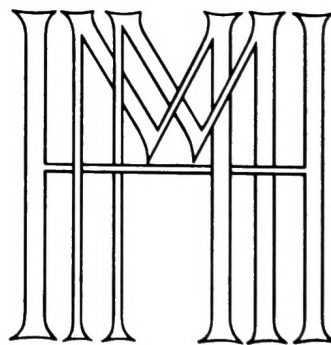
HM



MH



HHM

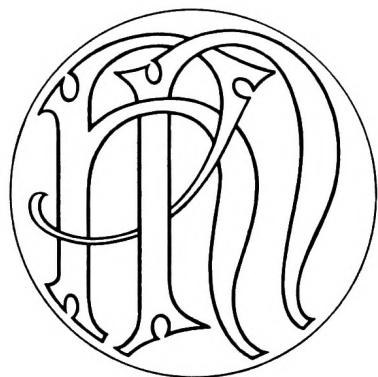


MMH

Ⓢ

Ⓢ

PLATE LXI—HK, HL, HM



HN



NH



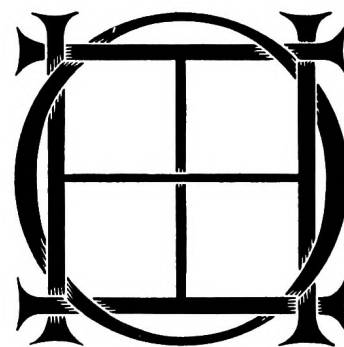
HHN



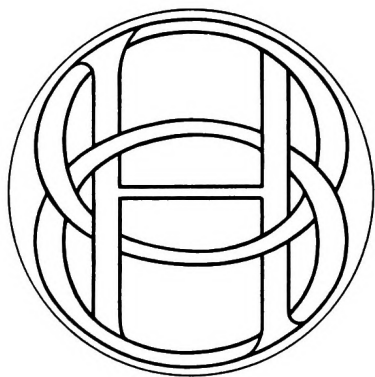
NNH



HO



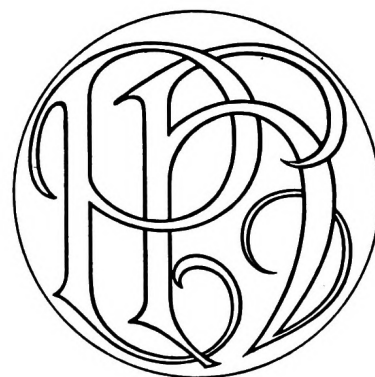
HHO



OOH



HP



PH

Ⓢ

Ⓢ

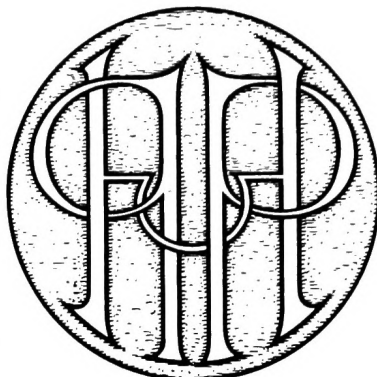
PLATE LXII—HN, HO, HP



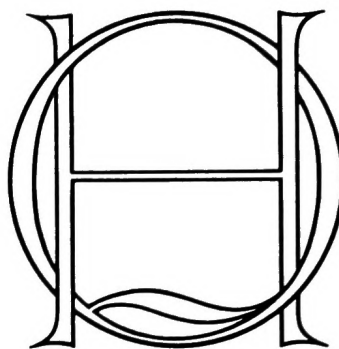




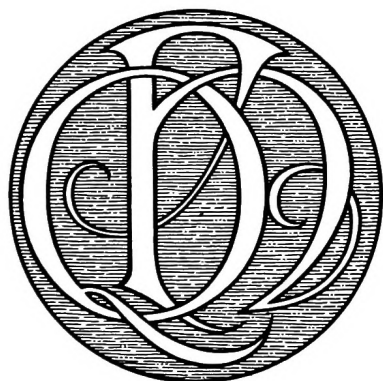
HHP



PPH



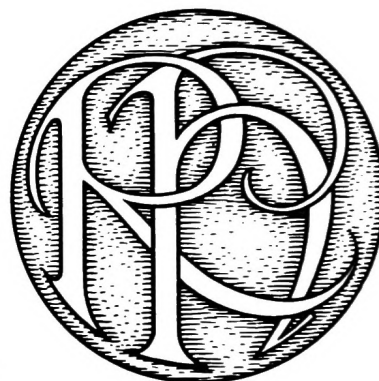
HQ



QH



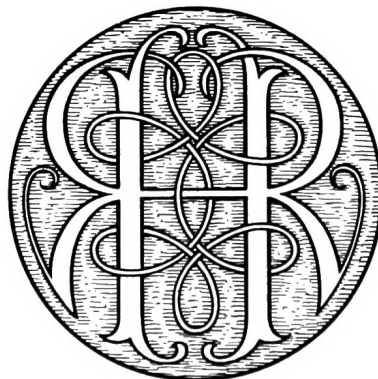
HR



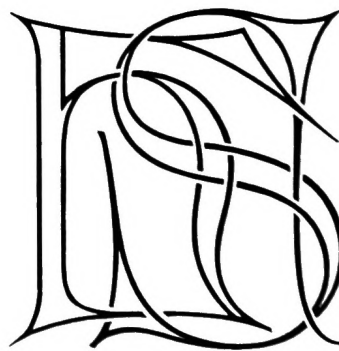
RH



HHR



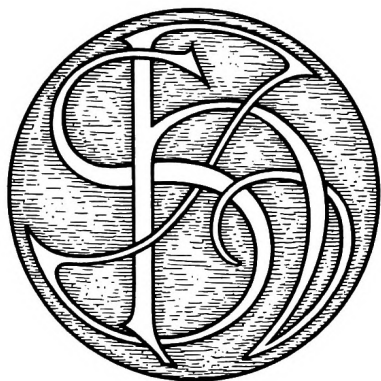
RRH



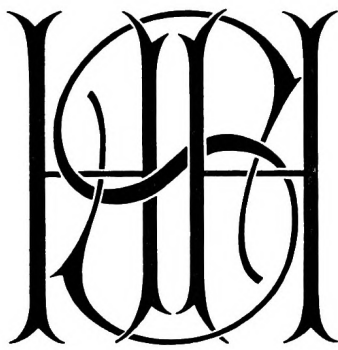
HS



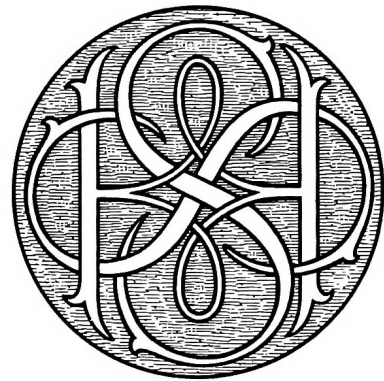
PLATE LXIII—HP, HQ, HR, HS



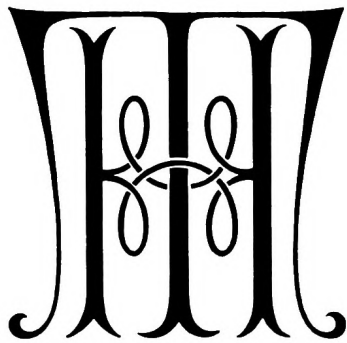
SH



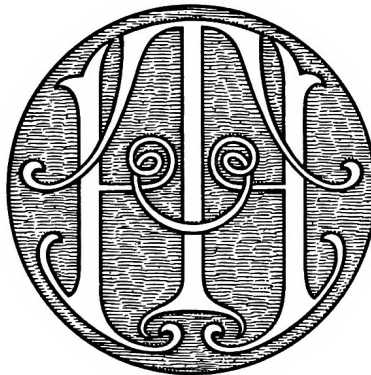
HHS



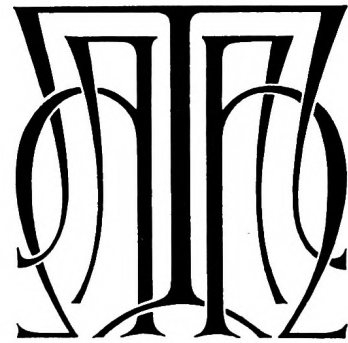
SSH



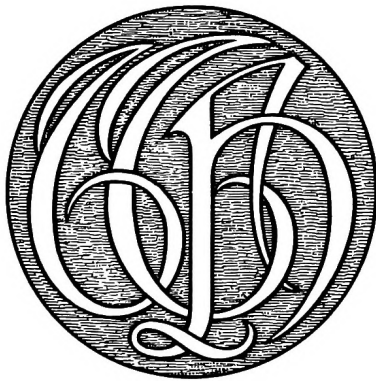
HT



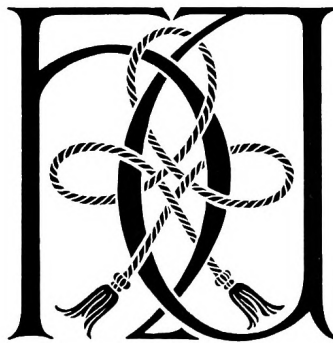
TH



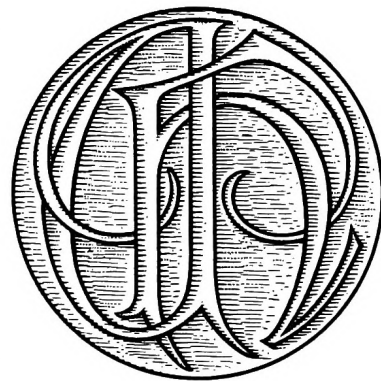
HHT



TTH



HU



UH

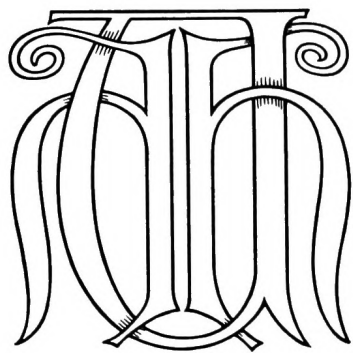


PLATE LXIV—HS, HT, HU

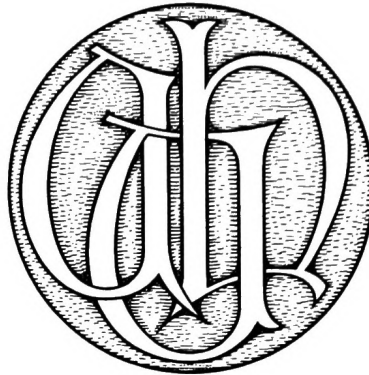




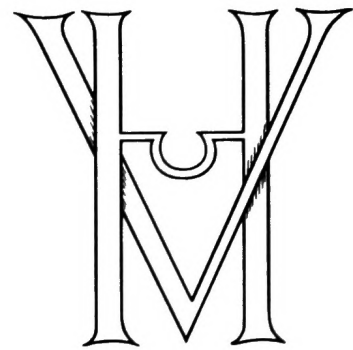




HU



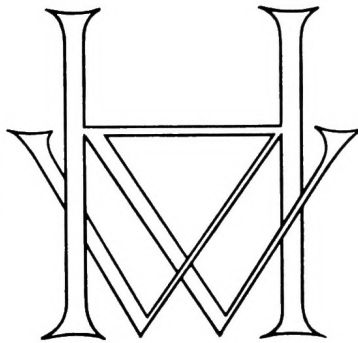
UH



HV



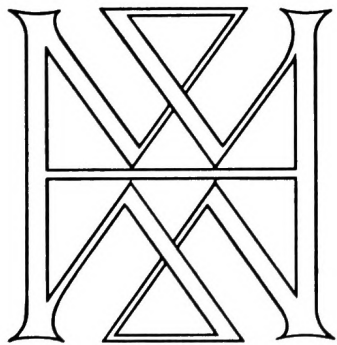
HW



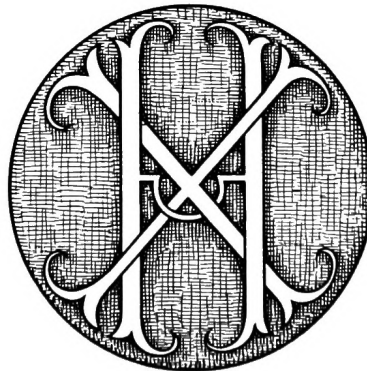
WH



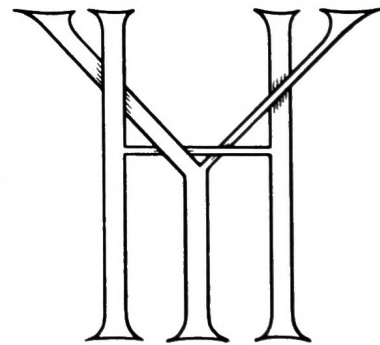
HHW



WWH



HX



HY

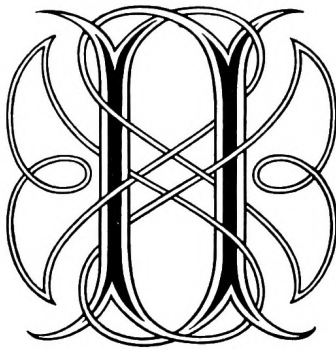
Ⓢ

Ⓢ

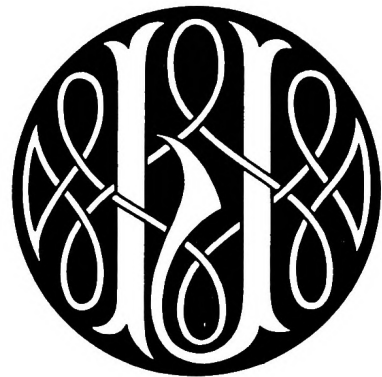
PLATE LXV—HU, HV, HW, HX, HY



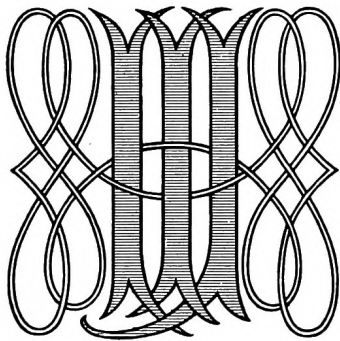
HZ



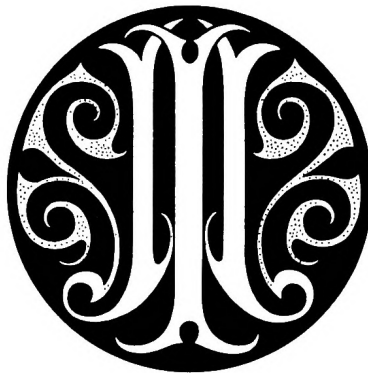
II



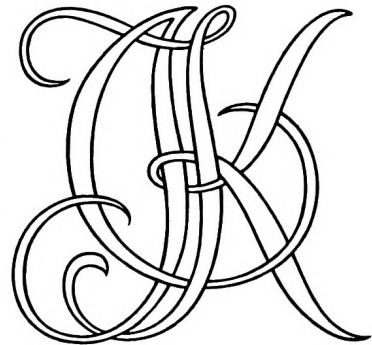
IJ



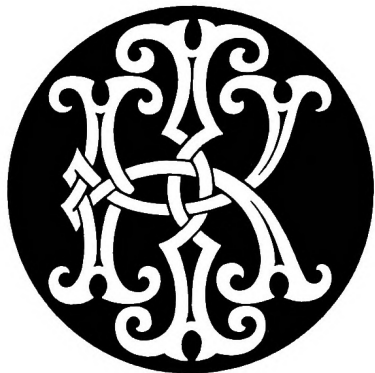
IIJ



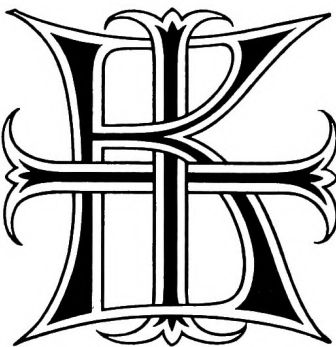
JJI



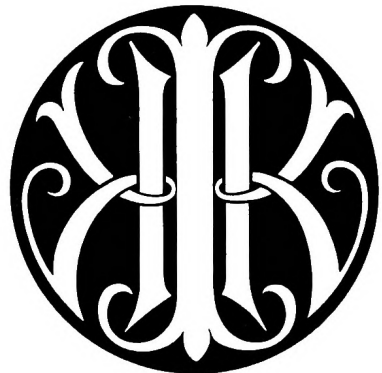
IK



KI



IIK



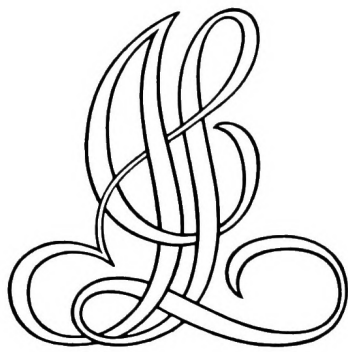
KKI



PLATE LXVI—HZ, II, IJ, IK



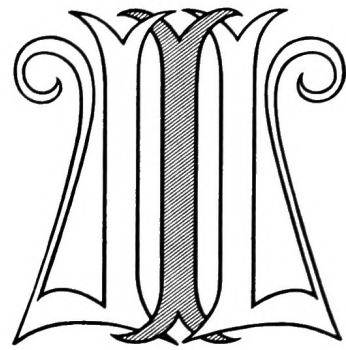




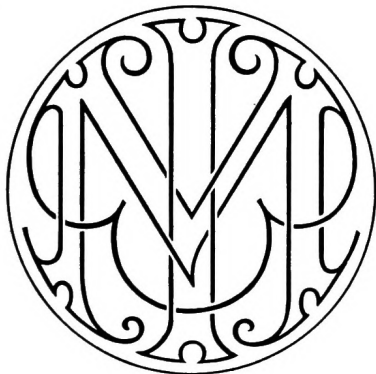
IL



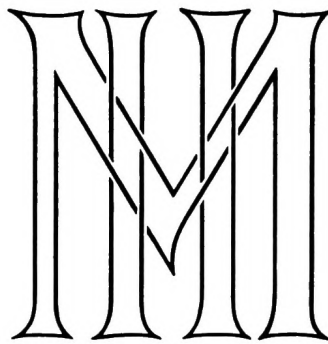
ILL



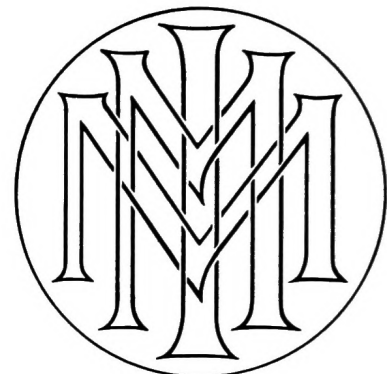
LLI



IM



IIM



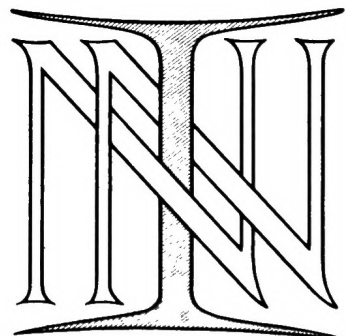
MMI



NI



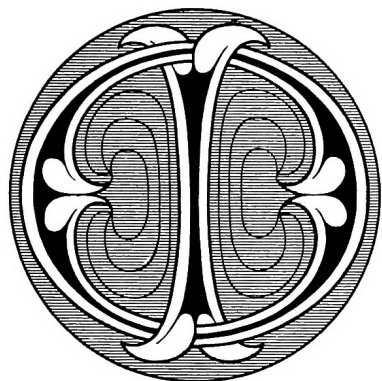
IIN



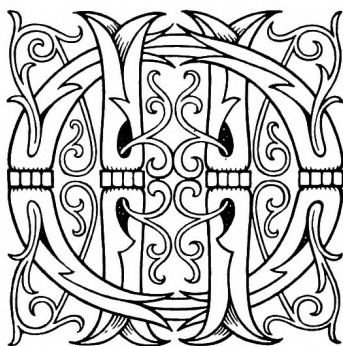
NNI



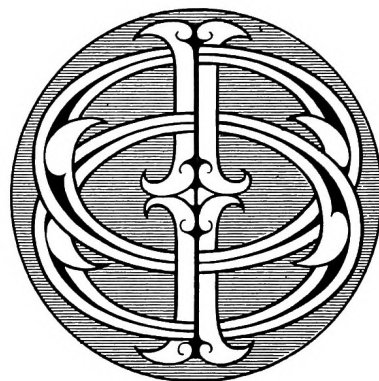
PLATE LXVII—IL, IM, IN



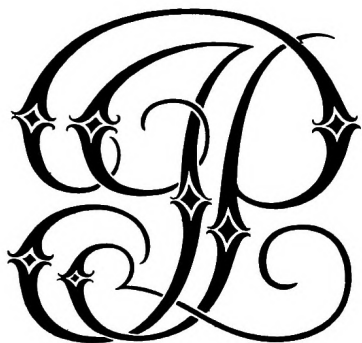
IO



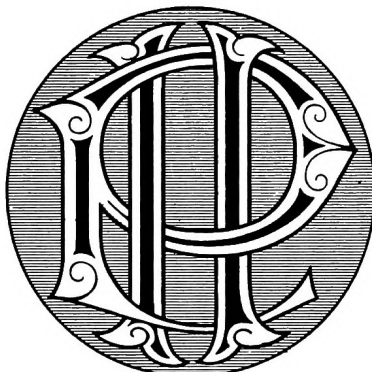
IIO



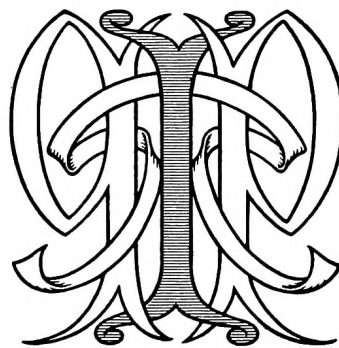
OOI



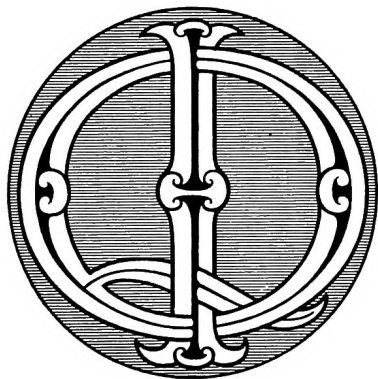
IP



IIP



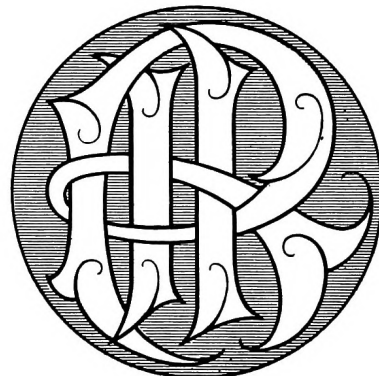
PPI



IQ



IR



IIR

Ⓢ

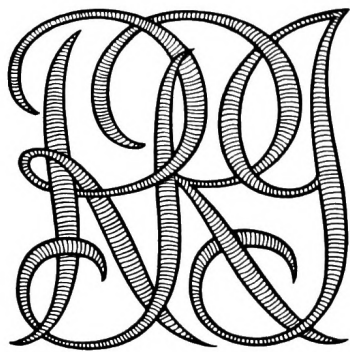
Ⓢ

PLATE LXVIII—IO, IP, IQ, IR

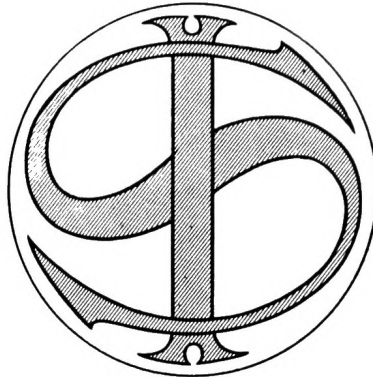




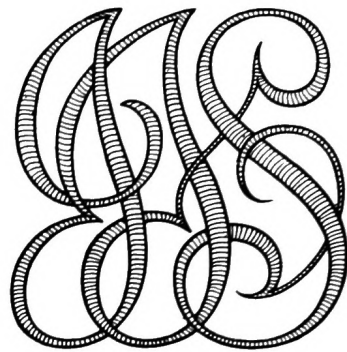




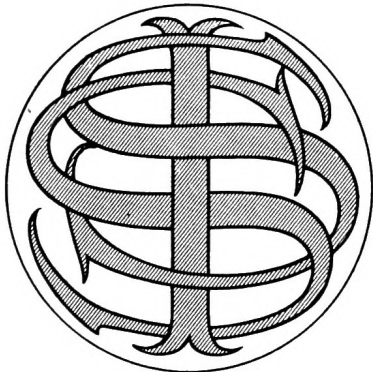
RRI



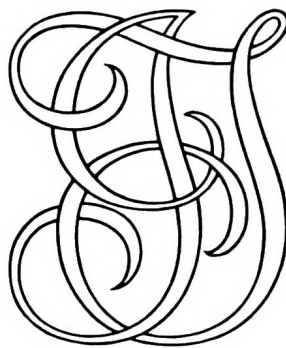
IS



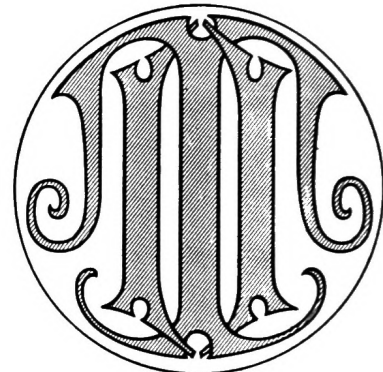
IIS



SSI



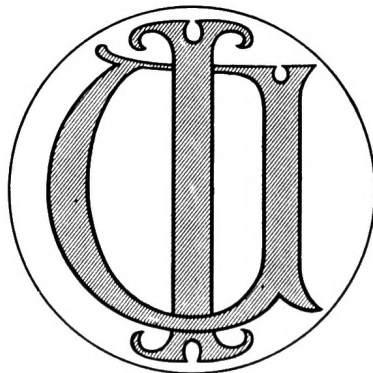
IT



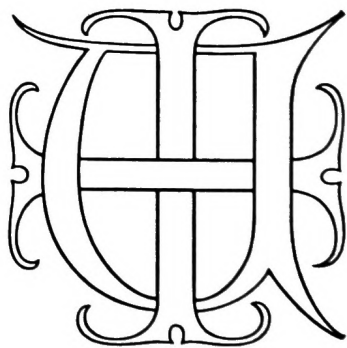
IIT



TTI



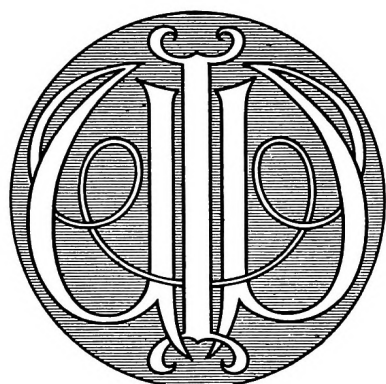
IU



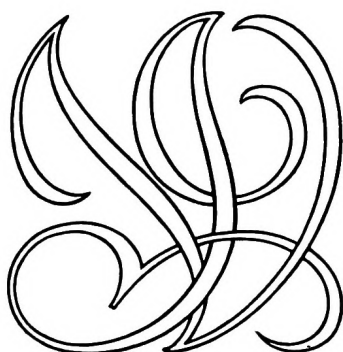
IIU



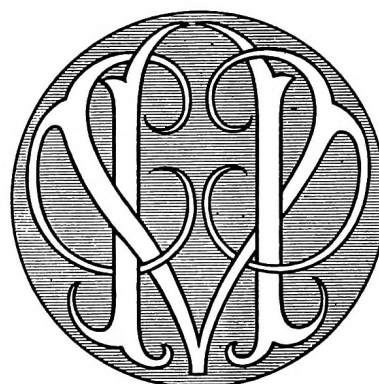
PLATE LXIX—IR, IS, IT, IU



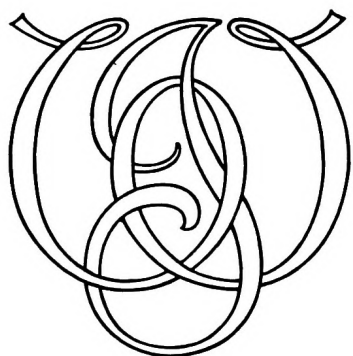
UUI



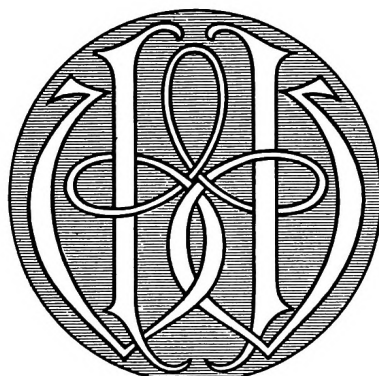
IV



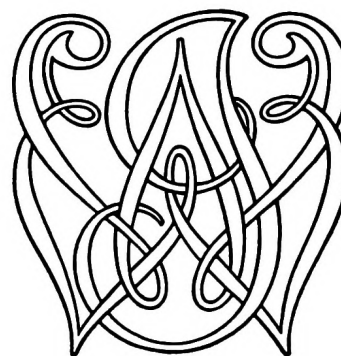
IIV



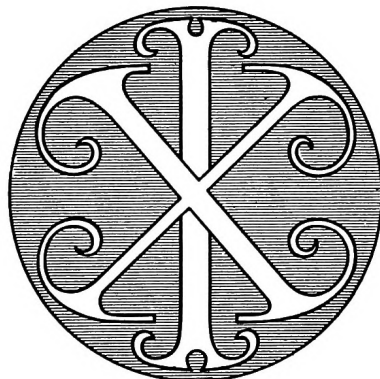
IW



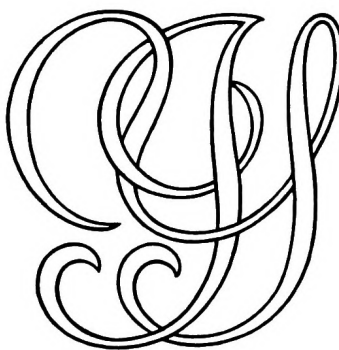
IIW



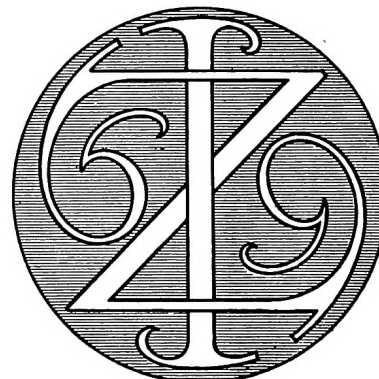
WWI



IX



IY



IZ

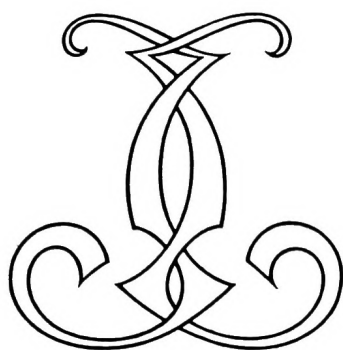
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Ⓢ

PLATE LXX—IU, IV, IW, IX, IY, IZ



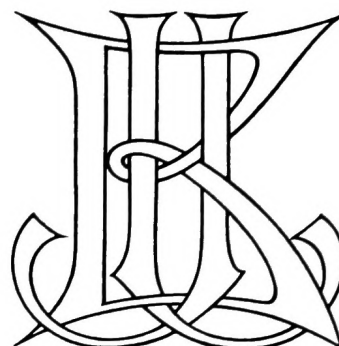




JJ



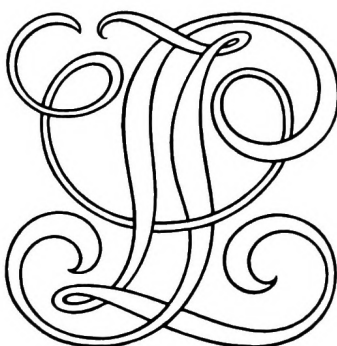
JK



JJK



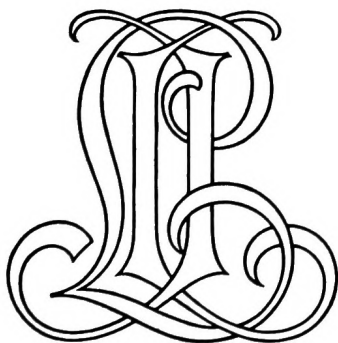
KKJ



JL



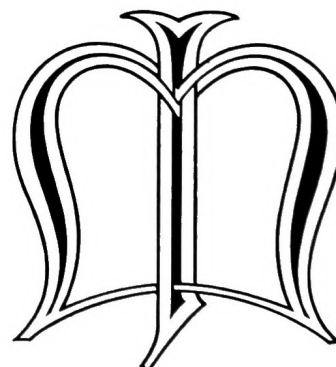
LJ



JJJ



LLJ



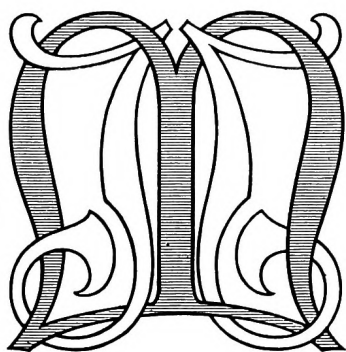
JM



PLATE LXXI—JJ, JK, JL, JM



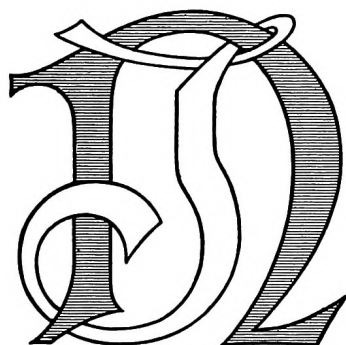
MJ



JJM



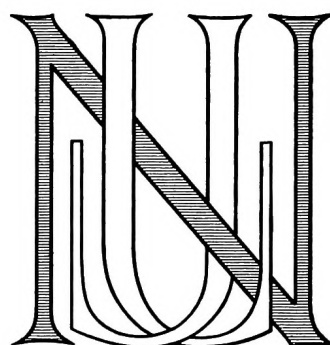
MMJ



JN



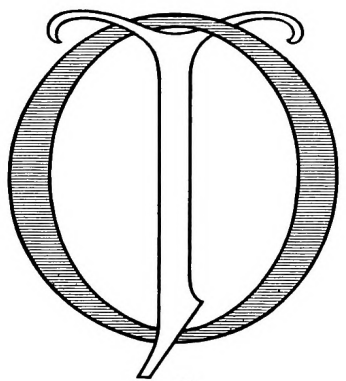
NJ



JJN



NNJ



JO



JJO

Ⓢ

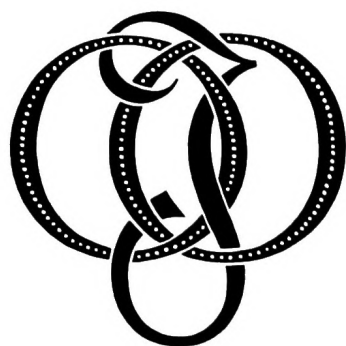
6

PLATE LXXII—JM, JN, JO

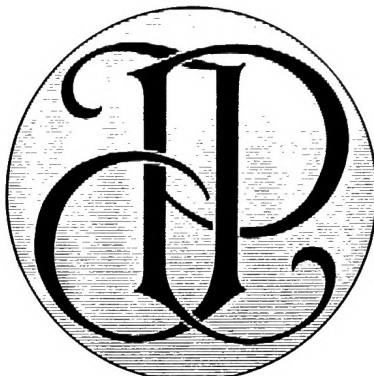




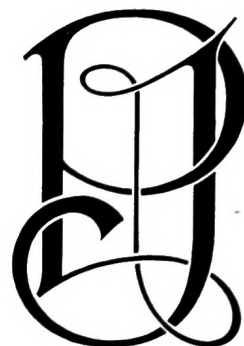




OOJ



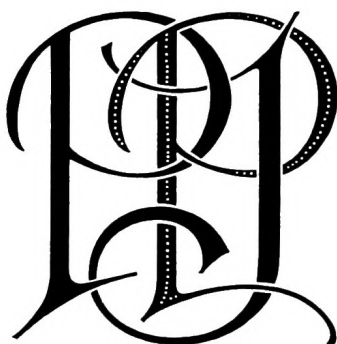
JP



PJ



JJP



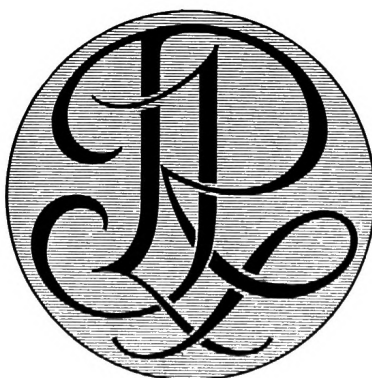
PPJ



JQ



QJ



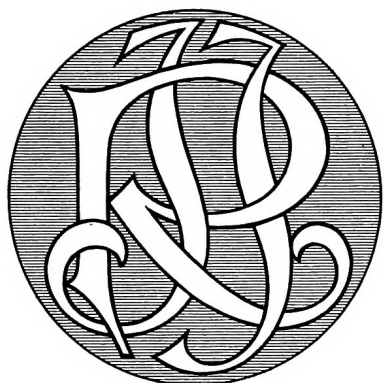
JR



RJ



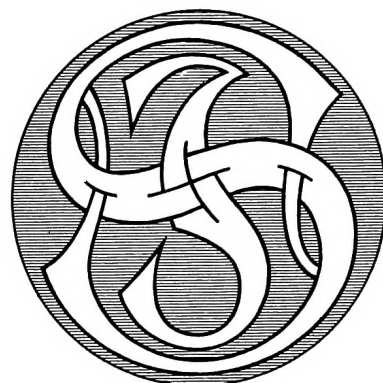
PLATE LXXIII—JO, JP, JQ, JR



JJR



RRJ



JS



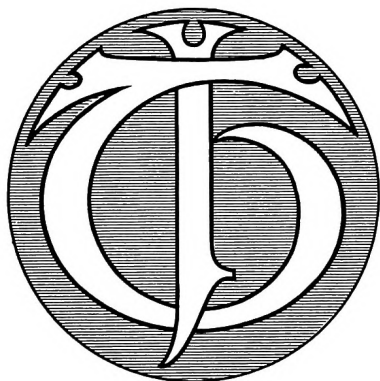
SJ



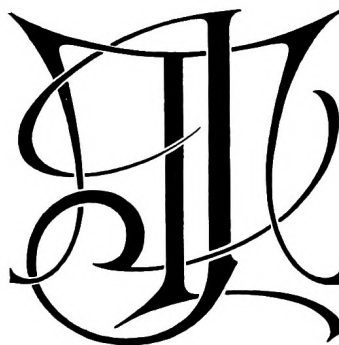
JJS



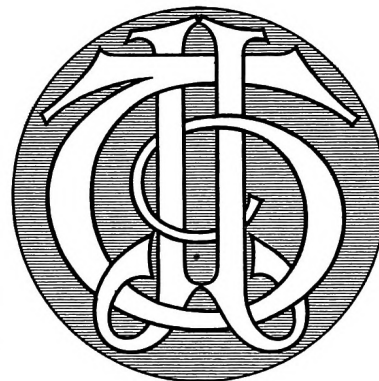
SSJ



JT



TJ



JJT



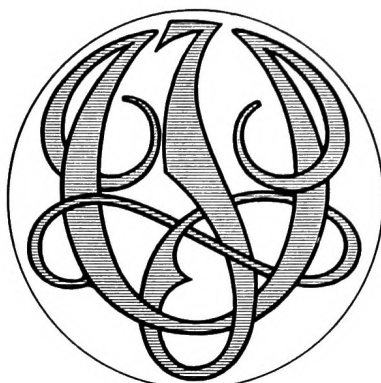
PLATE LXXIV—JR, JS, JT



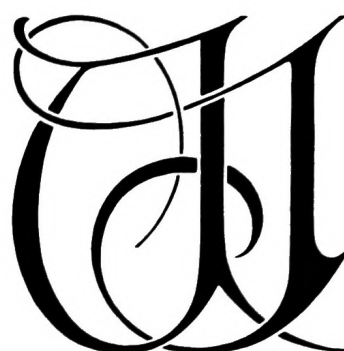




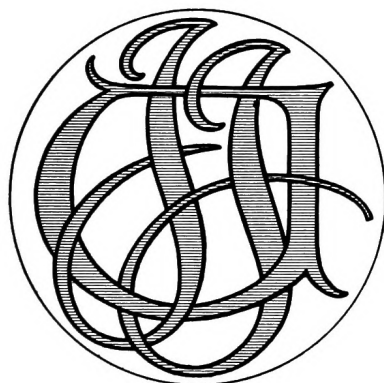
TTJ



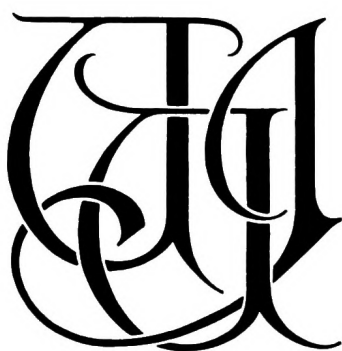
JU



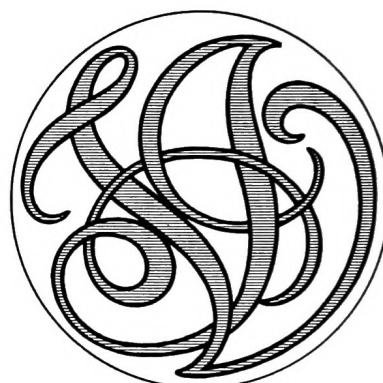
UJ



JJU



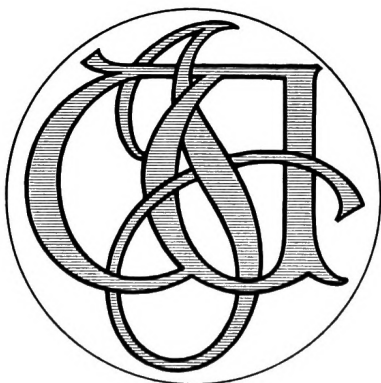
UUJ



JV



JJV



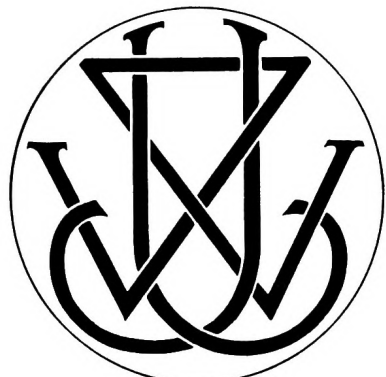
JW



WWJ



PLATE LXXV- JT, JU, JV, JW



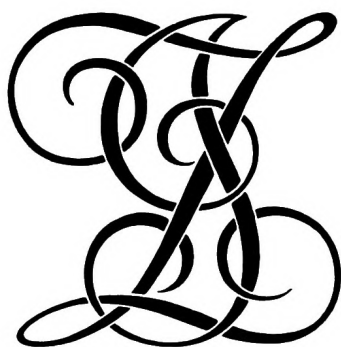
JW



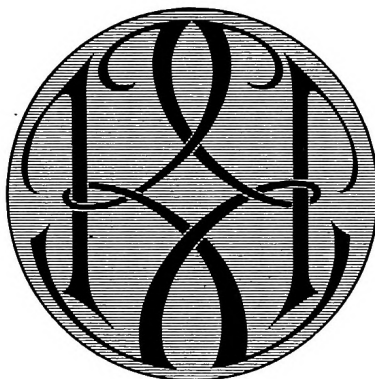
JX



JY



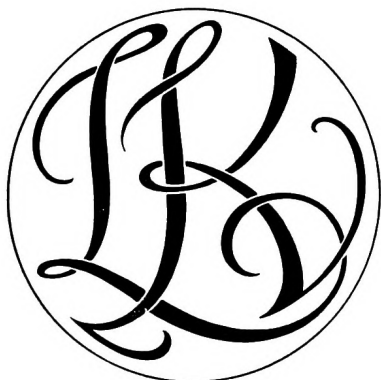
JZ



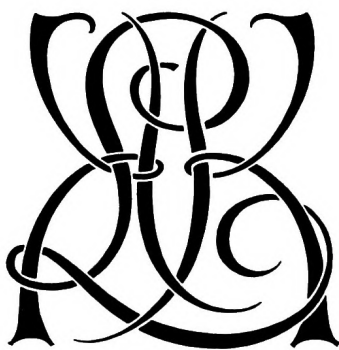
KK



KL



LK



KKL



LLK

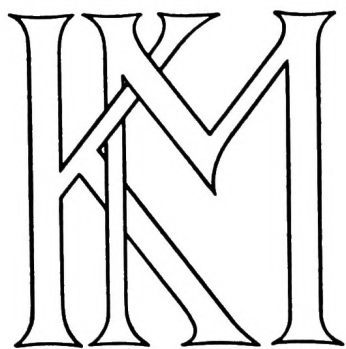


PLATE LXXVI—JW, JX, JY, JZ, KK, KL





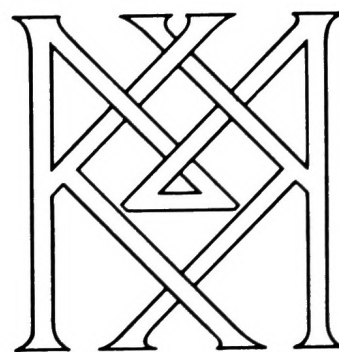




KM



MK



KKM



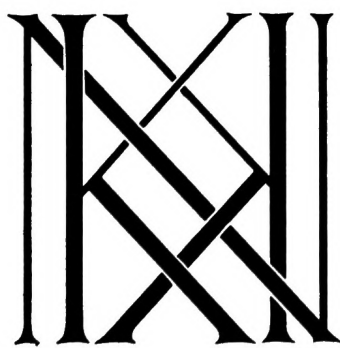
MMK



KN



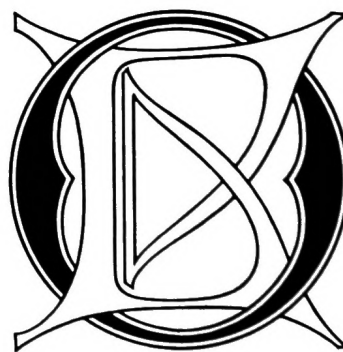
NK



KKN



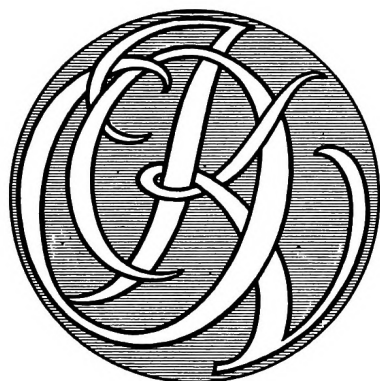
NNK



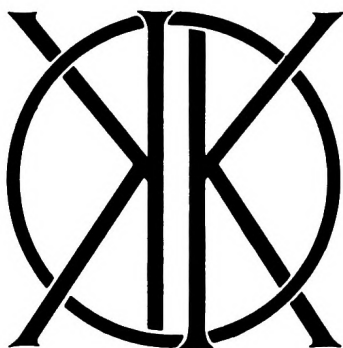
KO



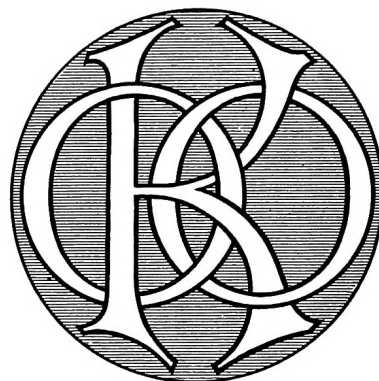
PLATE LXXVII—KM, KN, KO



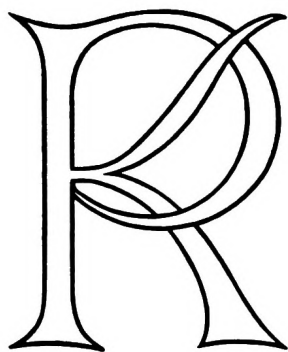
OK



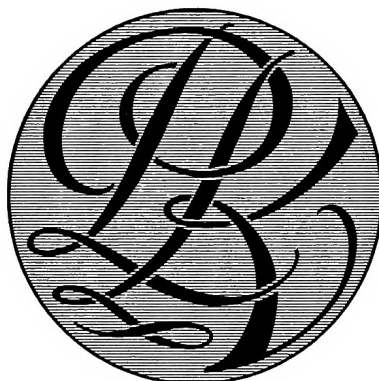
KKO



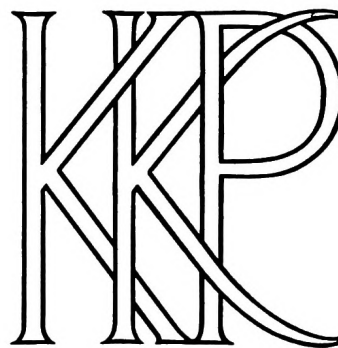
OOK



KP



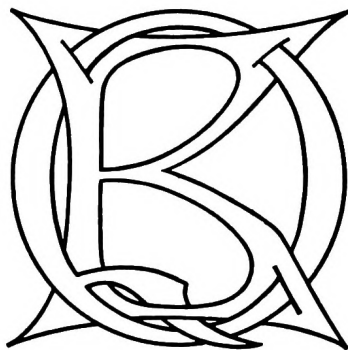
PK



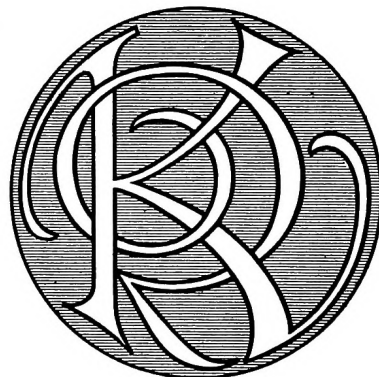
KKP



PPK



KQ



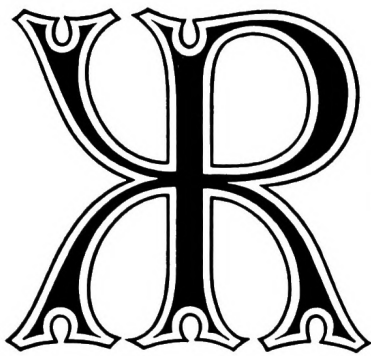
QK



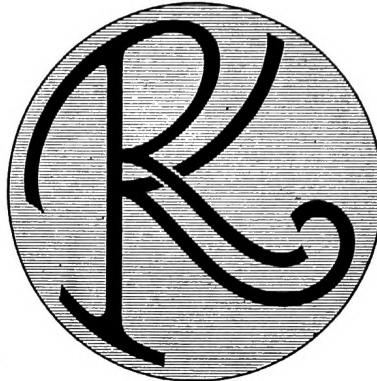
PLATE LXXVIII—KO, KP, KQ







KR



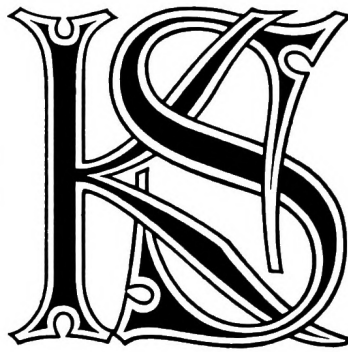
RK



KKR



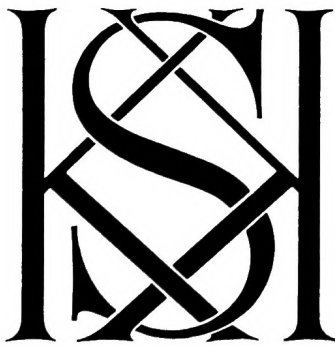
RRK



KS



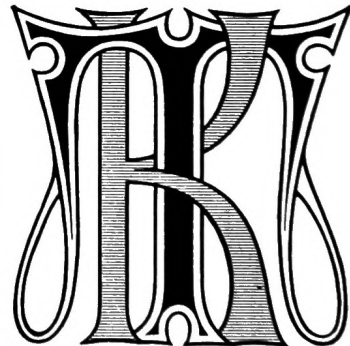
SK



KKS



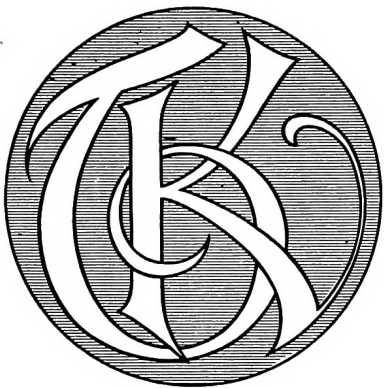
SSK



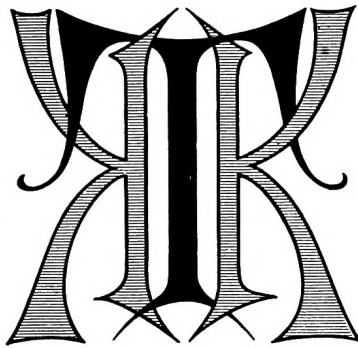
KT



PLATE LXXIX—KR, KS, KT



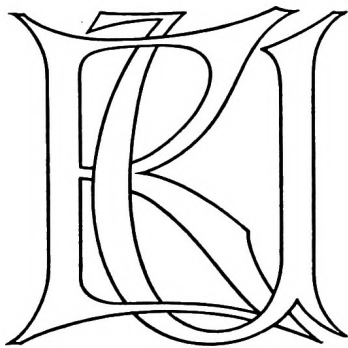
TK



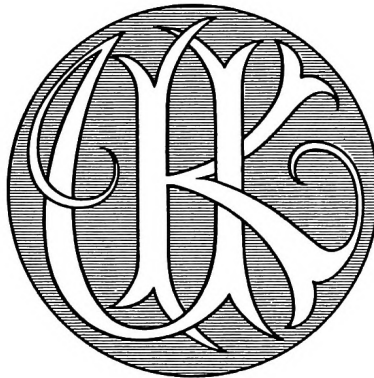
KKT



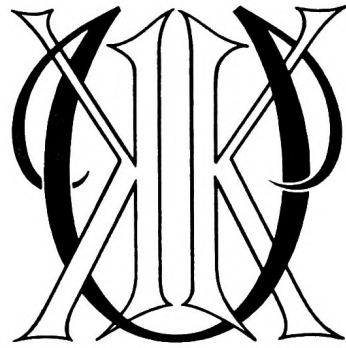
TTK



KU



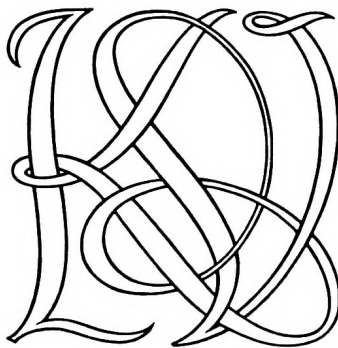
UK



KKU



UUK



KV



VK



PLATE LXXX—KT, KU, KV

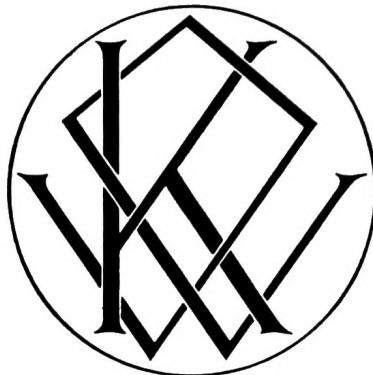








KKV



KW



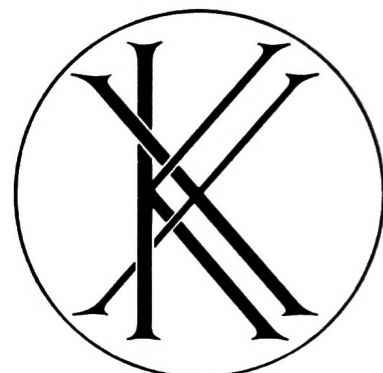
WK



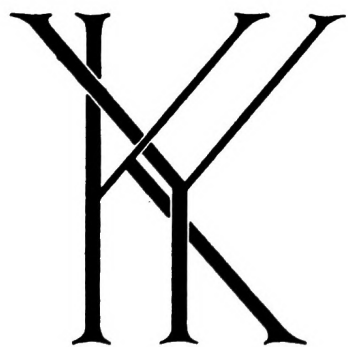
KKW



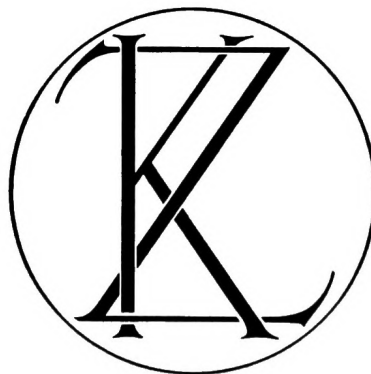
WWK



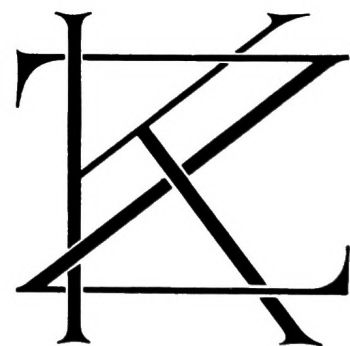
KX



KY



KZ



ZK

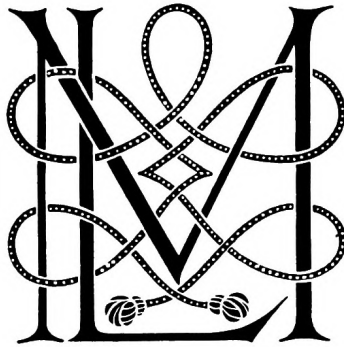
⑩

⑥

PLATE LXXXI—KV, KW, KX, KY, KZ



LL



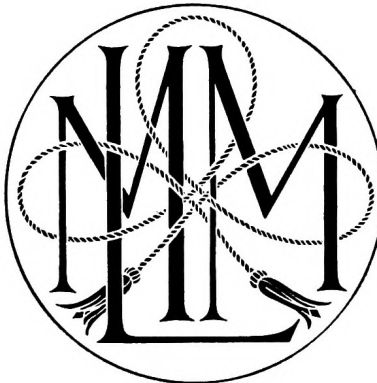
LM



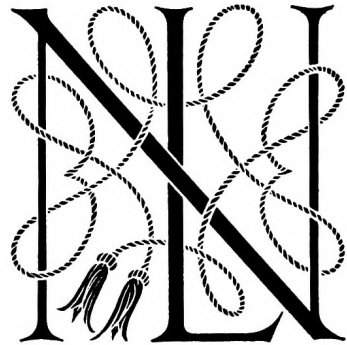
ML



LLM



MML



LN



NL



LLN



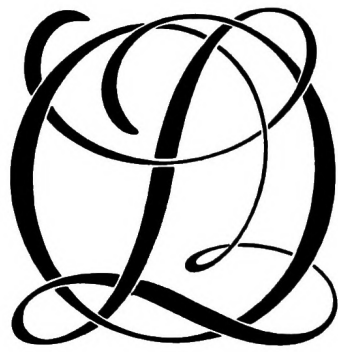
NNL



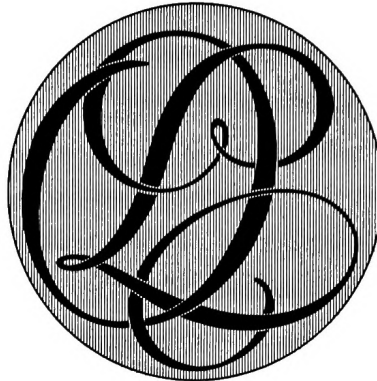
PLATE LXXXII—LL, LM, LN







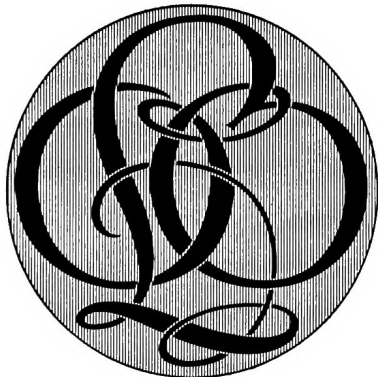
LO



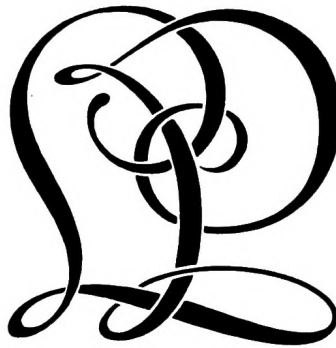
OL



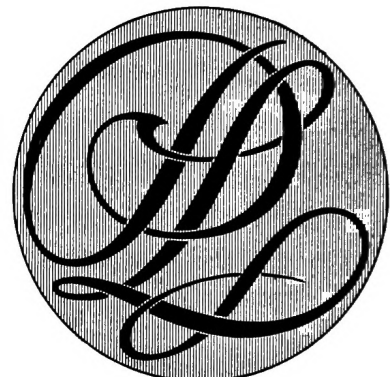
LLO



OOL



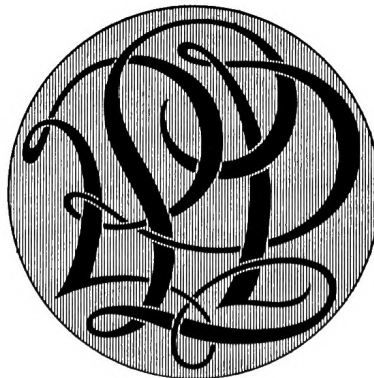
LP



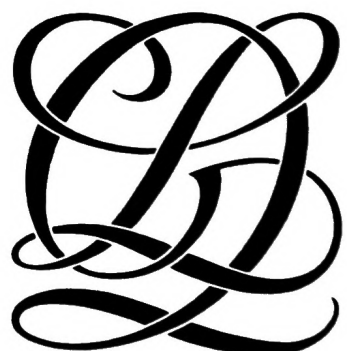
PL



LLP



LPP

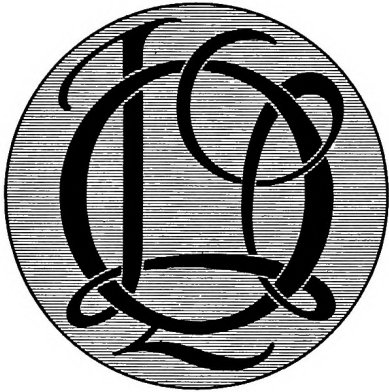


LQ

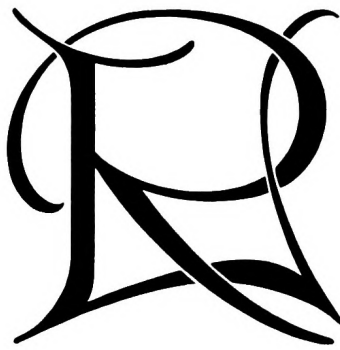
10

6

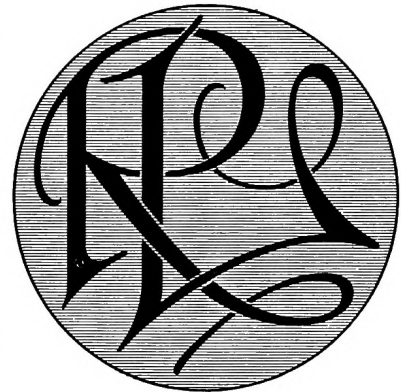
PLATE LXXXIII—LO, LP, LQ



QL



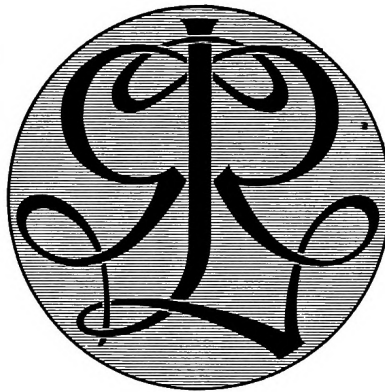
LR



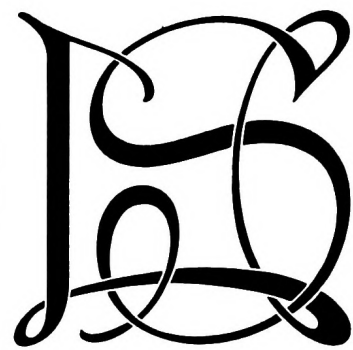
RL



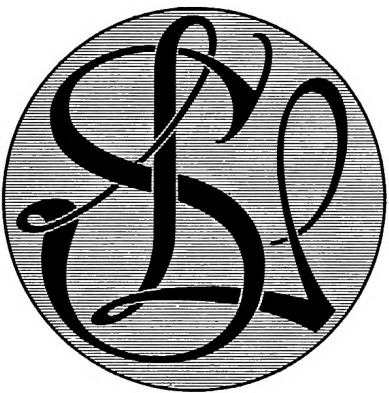
LLR



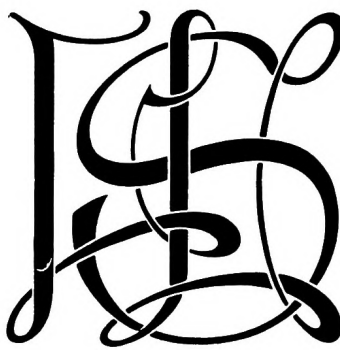
LRR



LS



SL



LLS



SSL

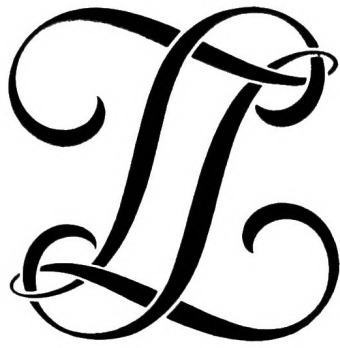


PLATE LXXXIV—LQ, LR, LS

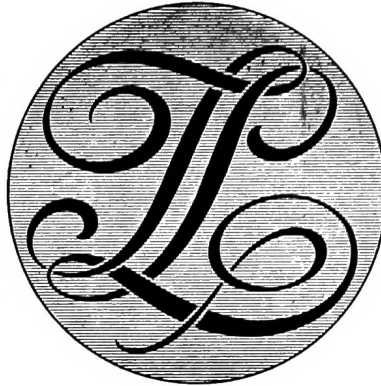








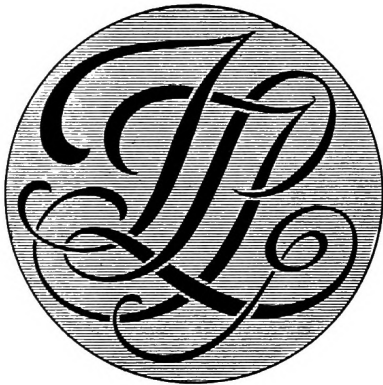
LT



TL



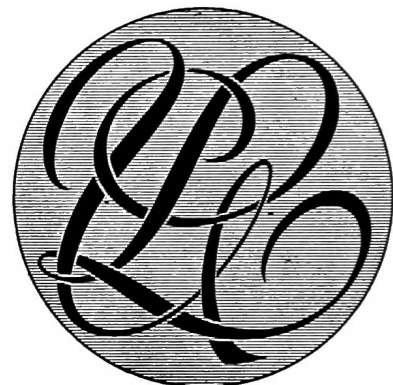
LLT



TTL



LU



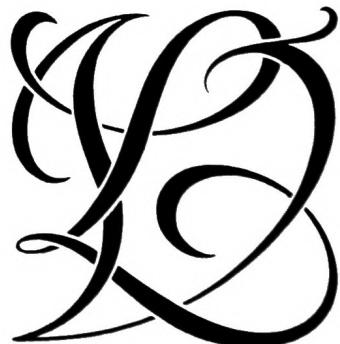
UL



LLU



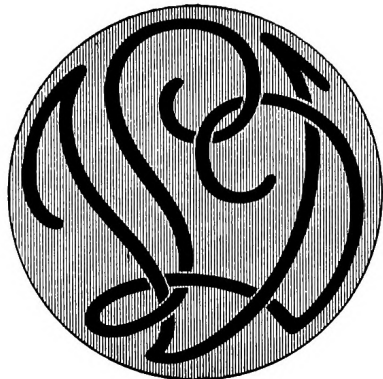
UUL



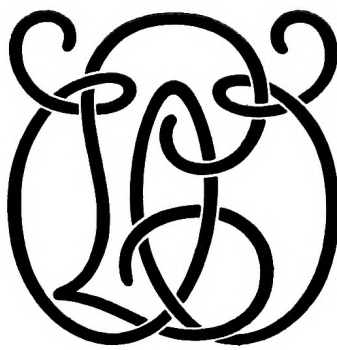
LV



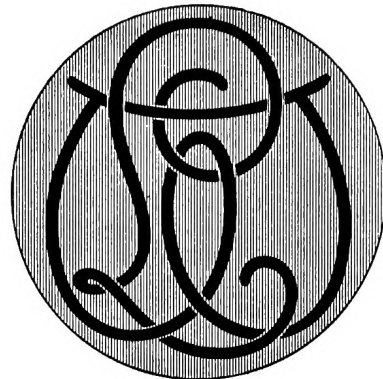
PLATE LXXXV—LT, LU, LV



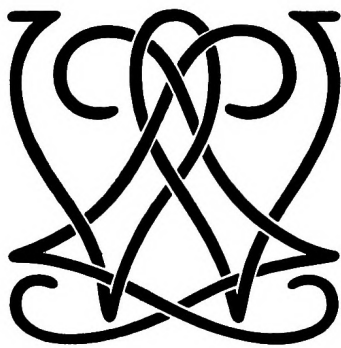
VL



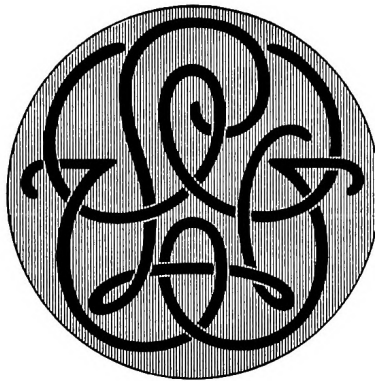
LW



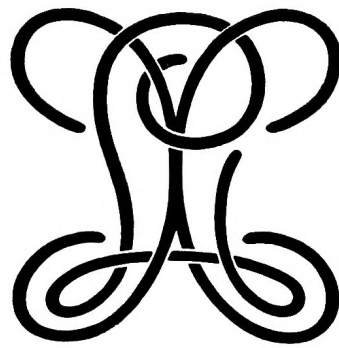
WL



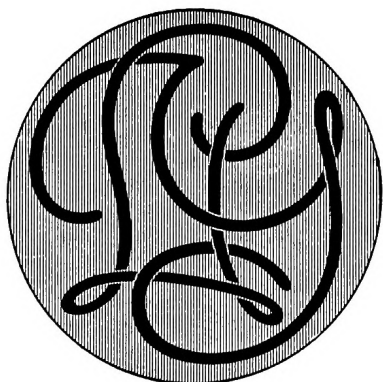
LLW



WWL



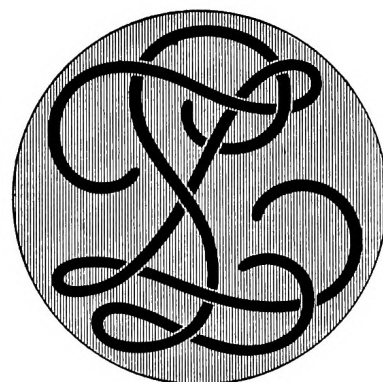
LX



LY



YL



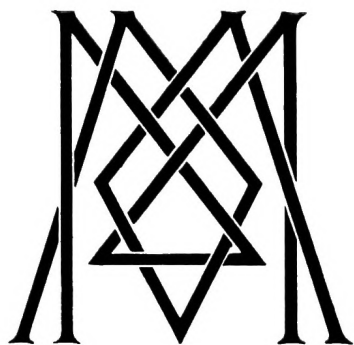
LZ



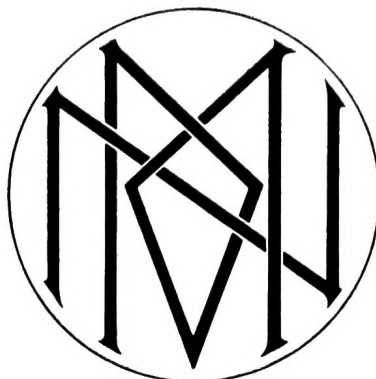
PLATE LXXXVI—LV, LW, LX, LY, LZ



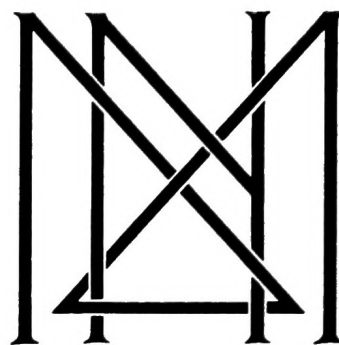




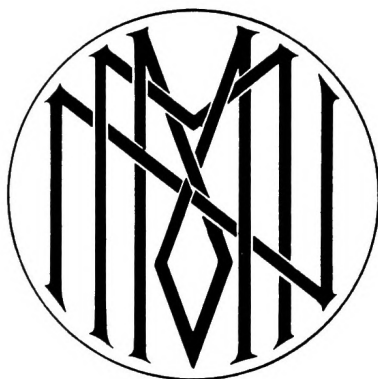
MM



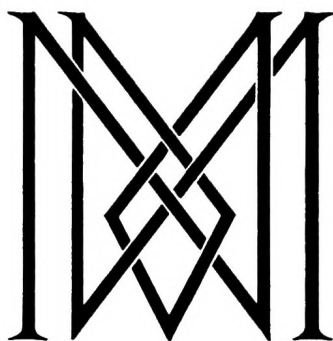
MN



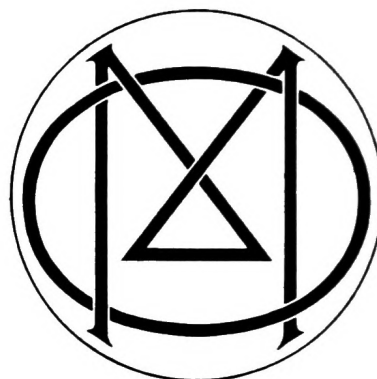
NM



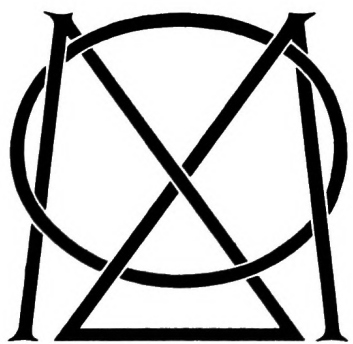
MMN



NMN



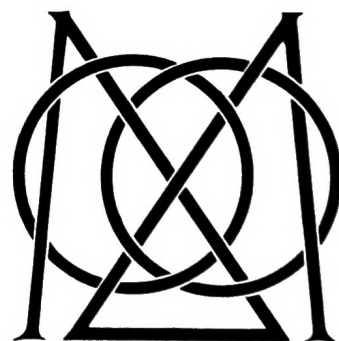
MO



OM



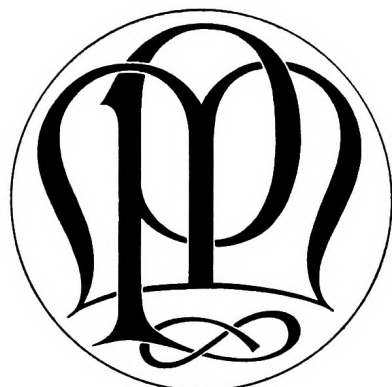
MMO



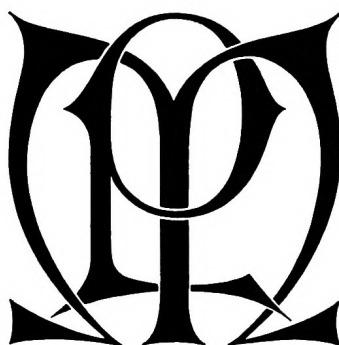
OOM



PLATE LXXXVII—MM, MN, MO



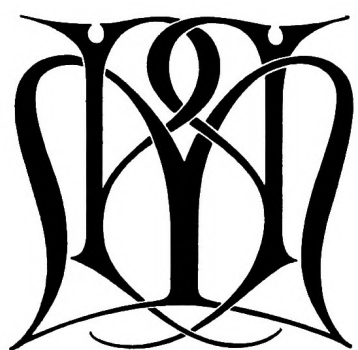
MP



PM



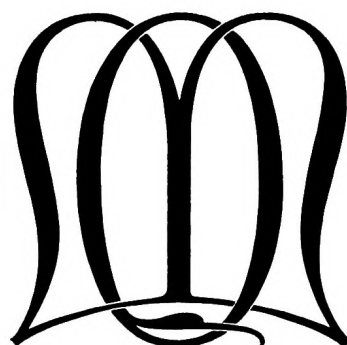
MMP



PPM



MQ



QM



MR



RM



MMR



PLATE LXXXVIII—MP, MQ, MR









RRM



MS



SM



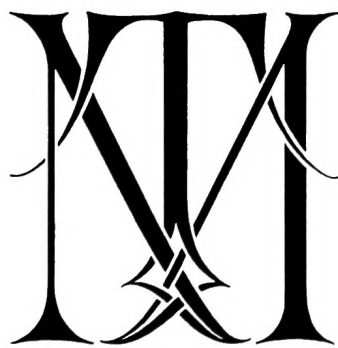
MMS



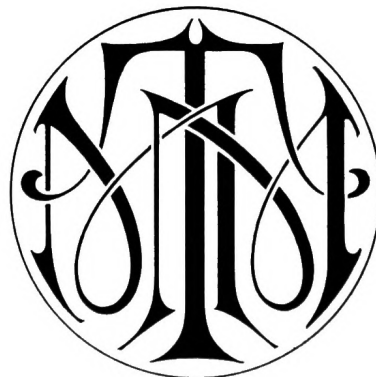
SSM



MT



TM



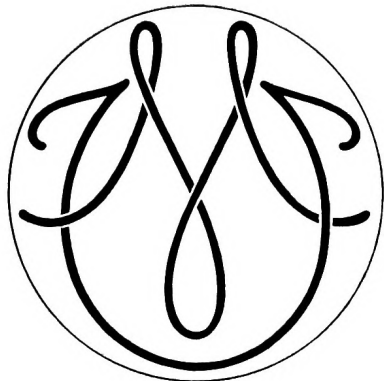
MMT



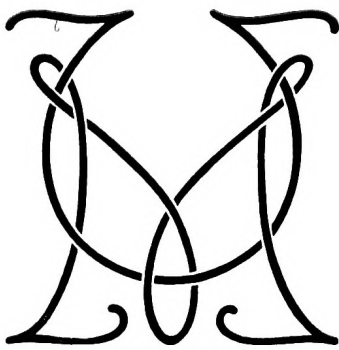
TTM



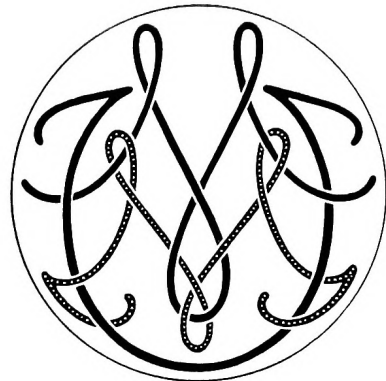
PLATE LXXXIX—MR, MS, MT



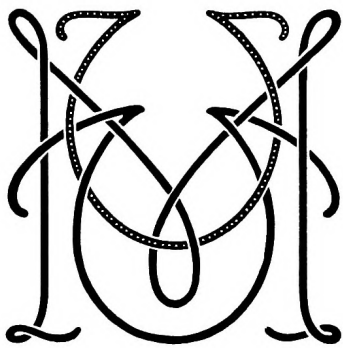
MU



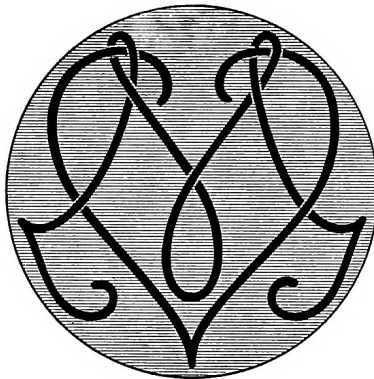
UM



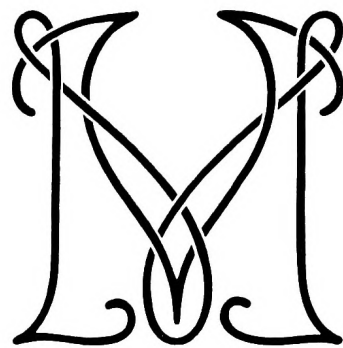
MMU



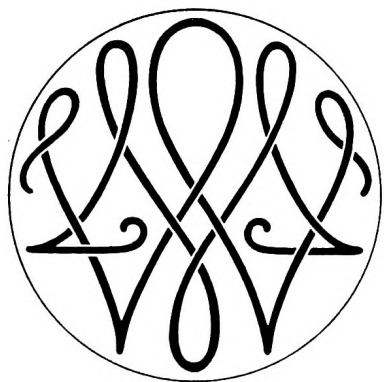
UUM



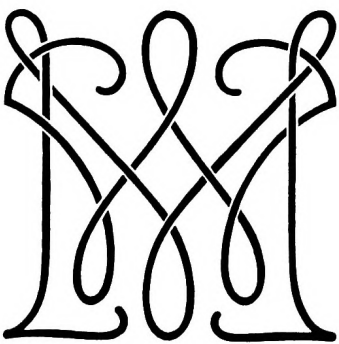
MV



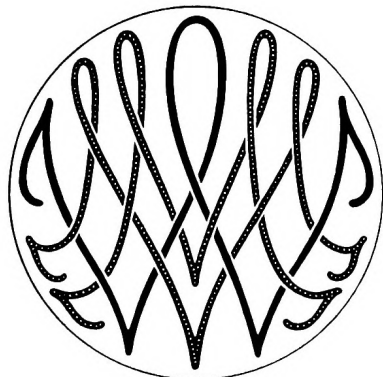
VM



MW



WM



MMW



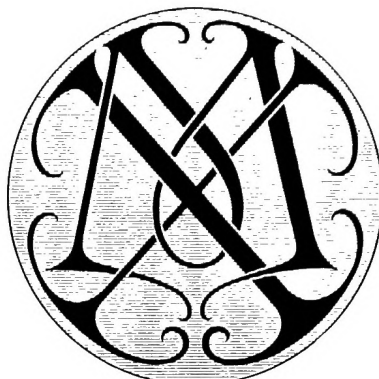
PLATE XC—MU, MV, MW







WWM



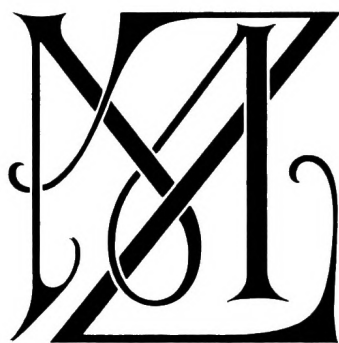
MX



MY



YM



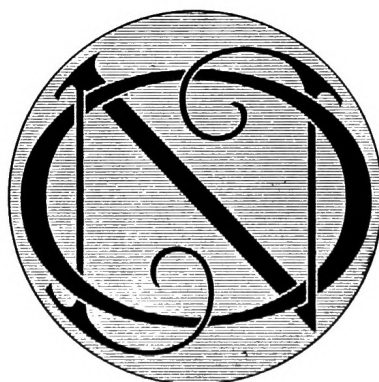
MZ



NN



NO



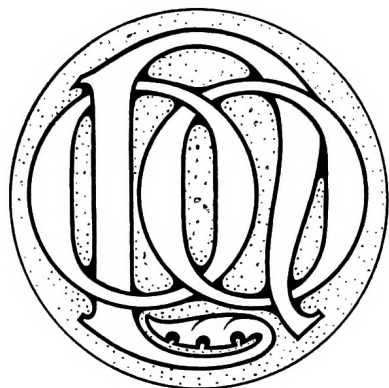
ON



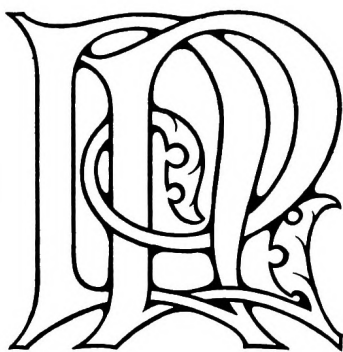
NNO



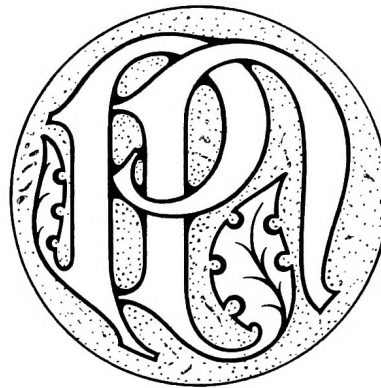
PLATE XCI—MW, MX, MY, MZ, NN, NO



OON



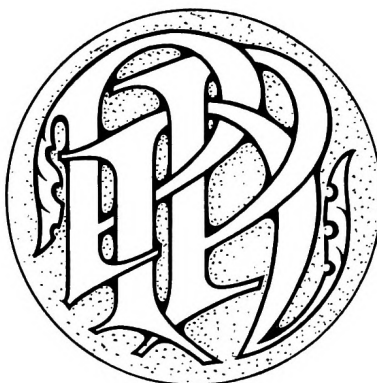
NP



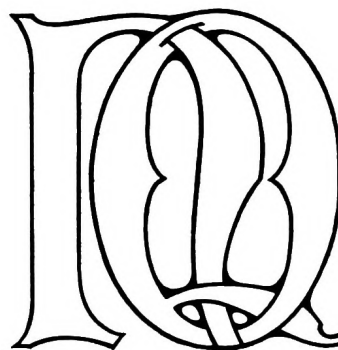
PN



NNP



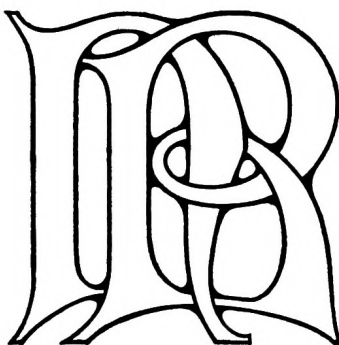
PPN



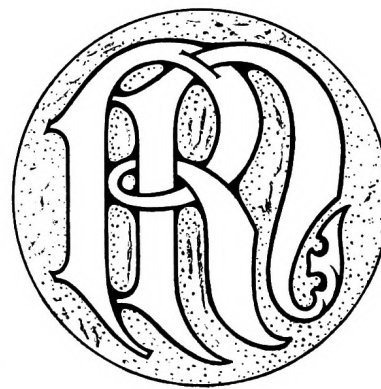
NQ



QN



NR



RN



PLATE XCII—NO, NP, NQ, NR

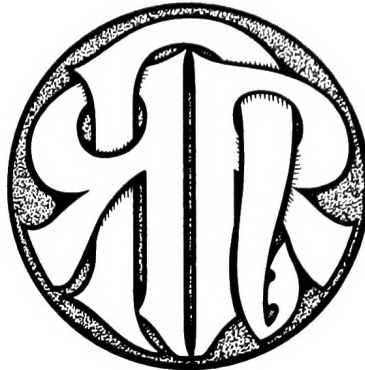




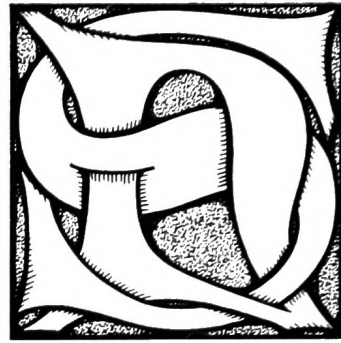




NNR



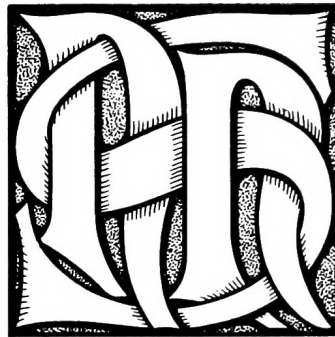
RRN



NS



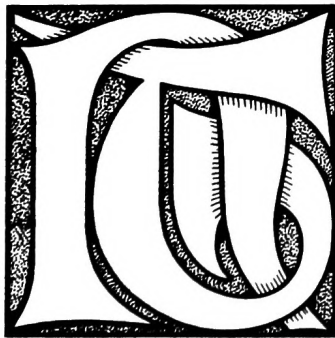
SN



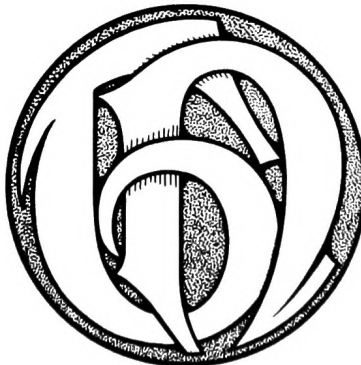
NNS



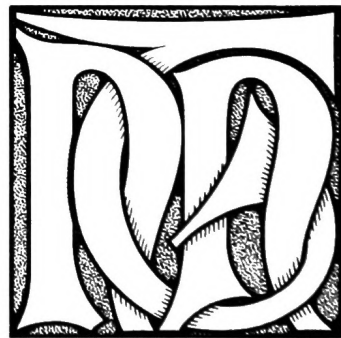
SSN



NT



TN



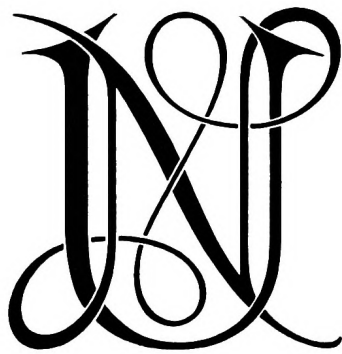
NNT



PLATE XCIII—NR, NS, NT



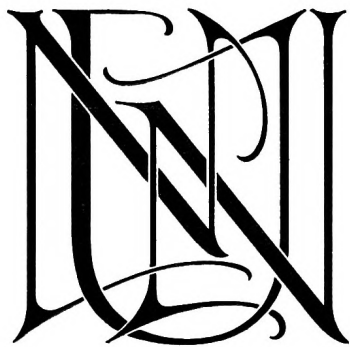
TTN



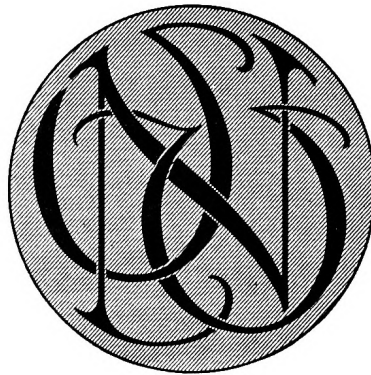
NU



UN



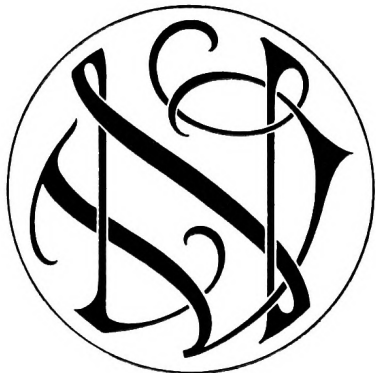
NNU



UUN



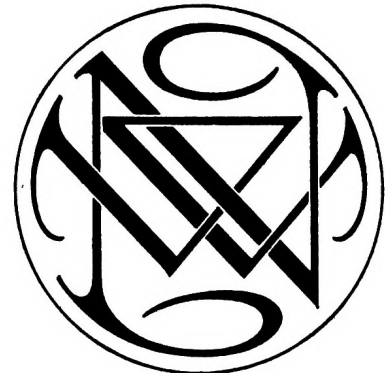
NV



VN



NW



WN



PLATE XCIV—NT, NU, NV, NW



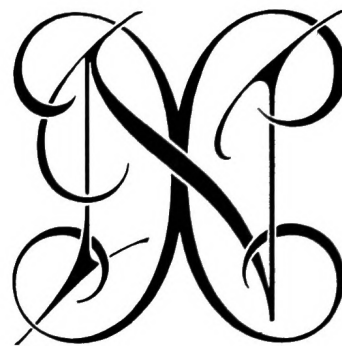




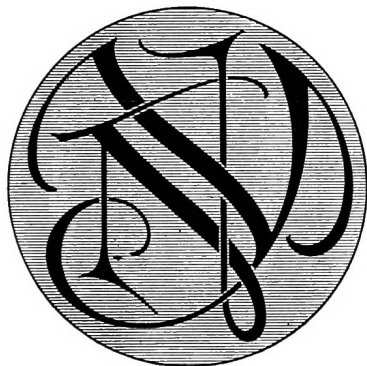
NNW



WWN



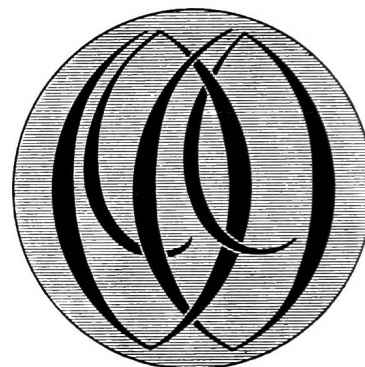
NX



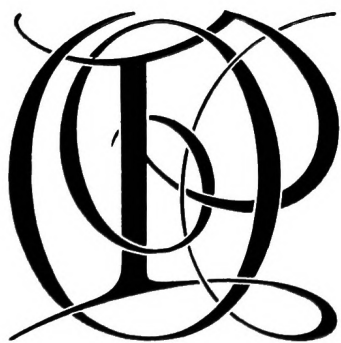
NY



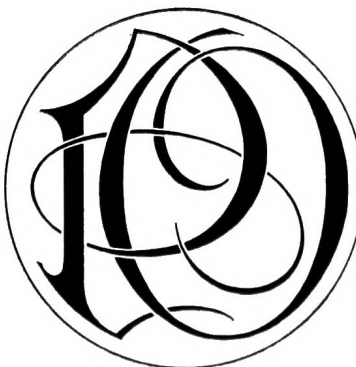
NZ



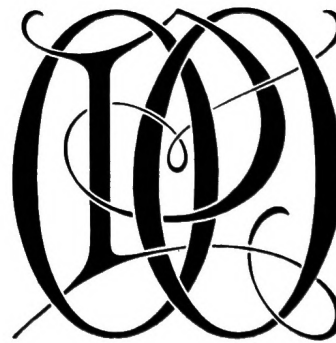
OO



OP



PO



OOP

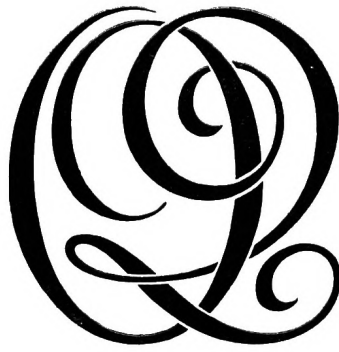
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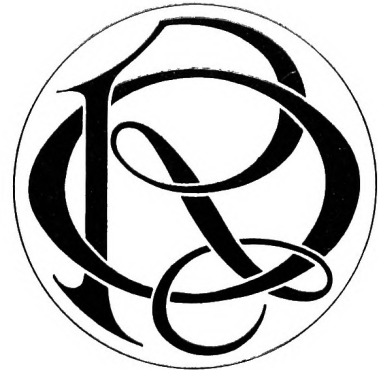
PLATE XCV—NW, NX, NY, NZ, OO, OP



PPO



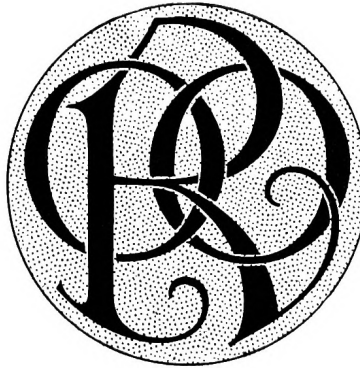
OQ



OR



RO



OOR



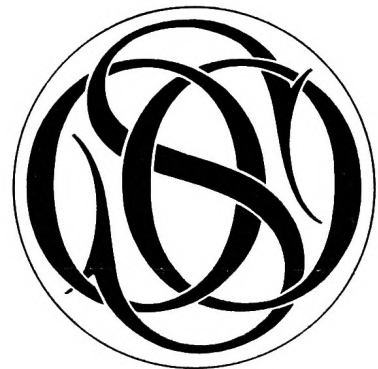
RRO



OS



SO



OOS



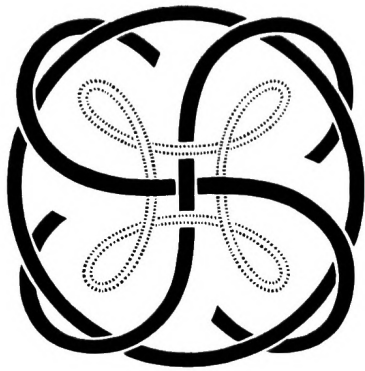
PLATE XCVI—OP, OQ, OR, OS



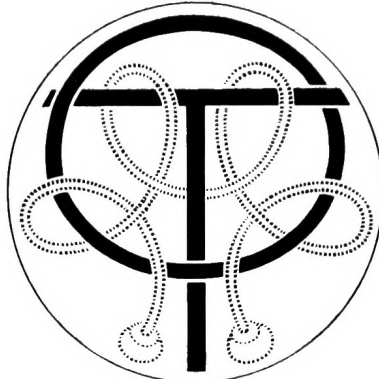


Digitization Support from  
**MICROSOFT**

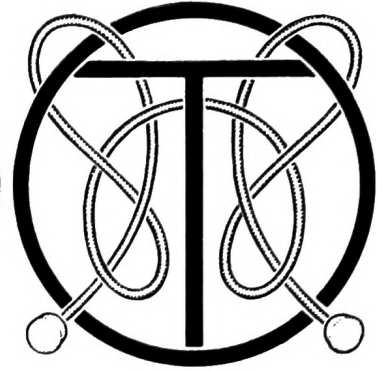
Original from  
**YALE UNIVERSITY**



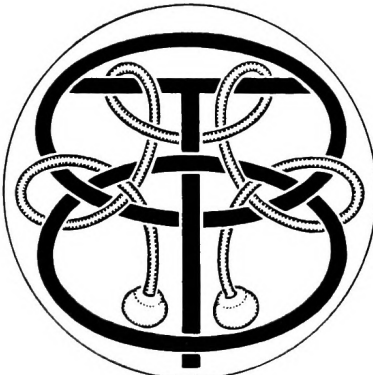
SSO



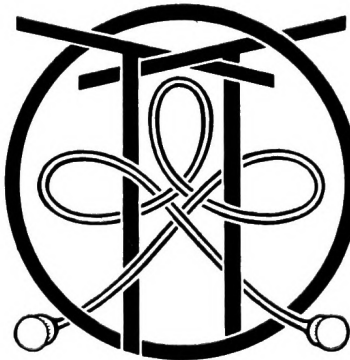
OT



TO



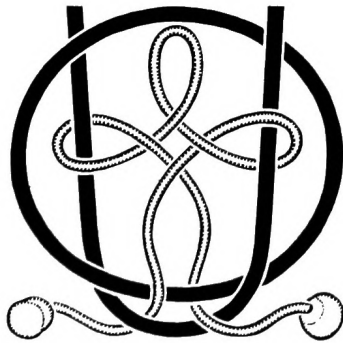
OOT



TTO



OU



UO



OV



VO

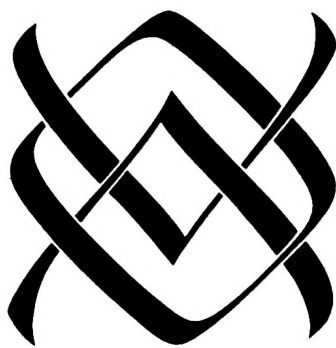
11

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PLATE XCVII—OS, OT, OU, OV



OOV



VVO



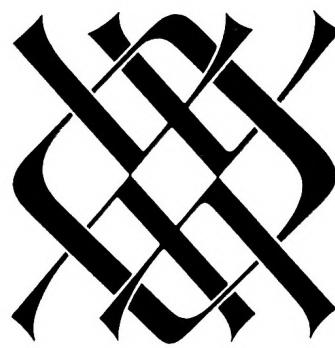
OW



WO



OOW



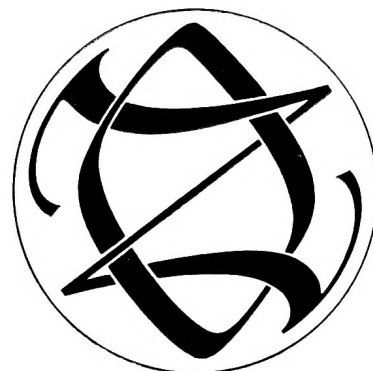
WWO



OX



OY



OZ



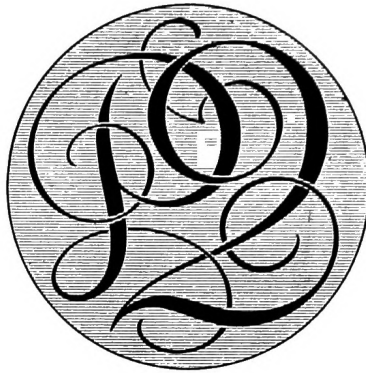
PLATE XCVIII—OV, OW, OX, OY, OZ



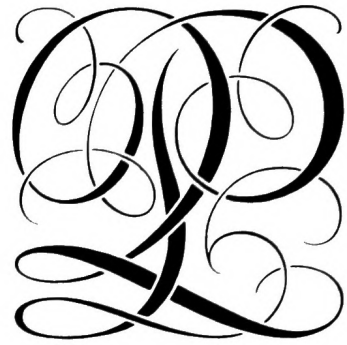




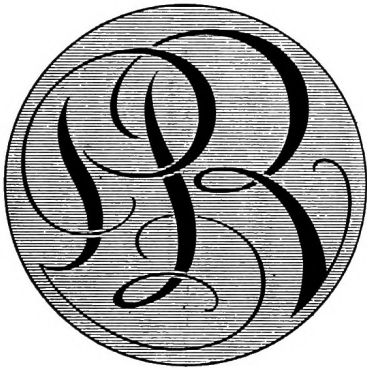
PP



PQ



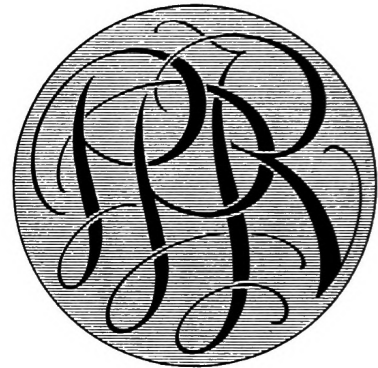
QP



PR



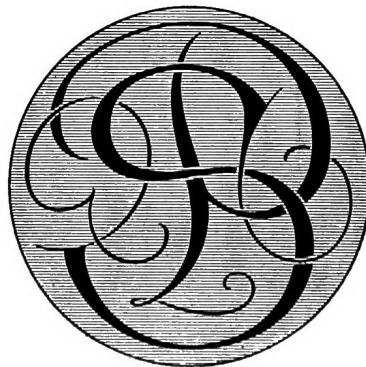
RP



PPR



PRR



PS



SP



PLATE XCIX—PP, PQ, PR, PS



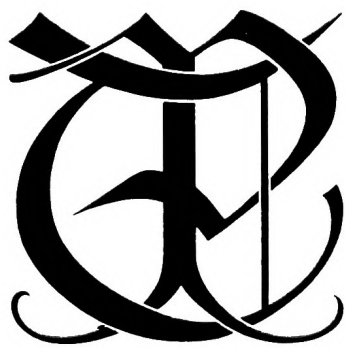
PPS



PSS



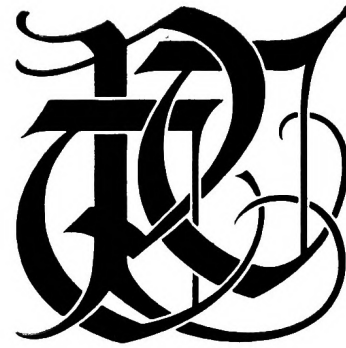
PT



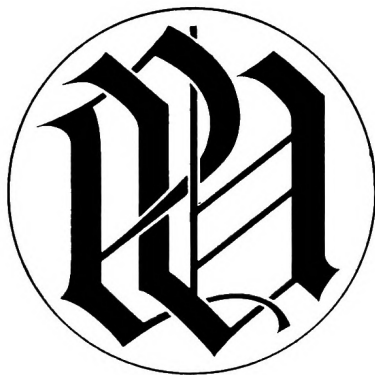
TP



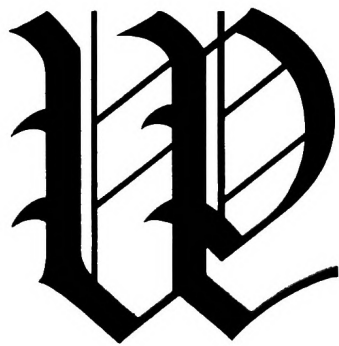
PPT



TTP



PU



UP



PPU

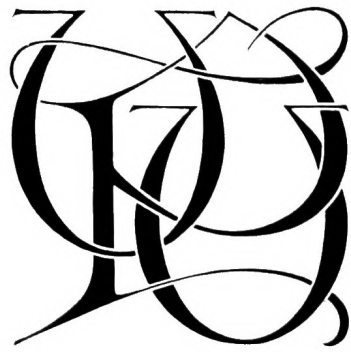


PLATE C—PS, PT, PU









UUP



PV



VP



PPV



PW



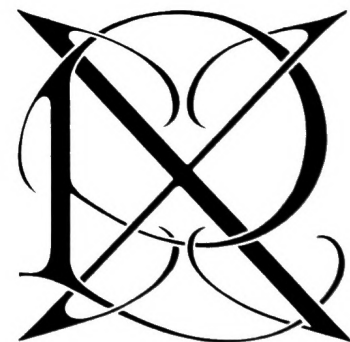
WP



PPW



WWP

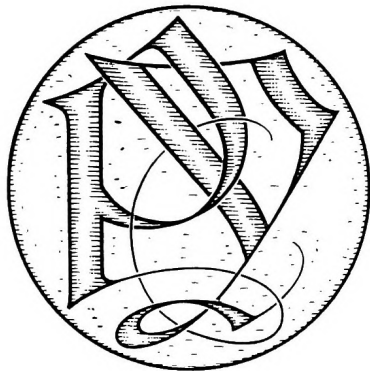


PX

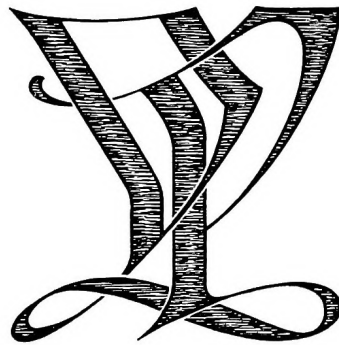
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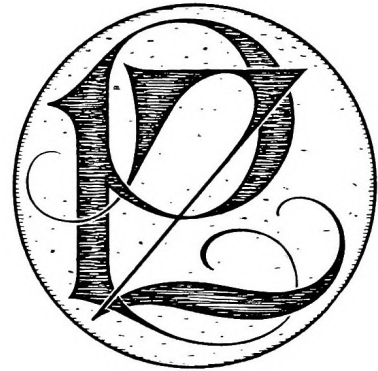
PLATE CI PUꝛ PV, PW, PX



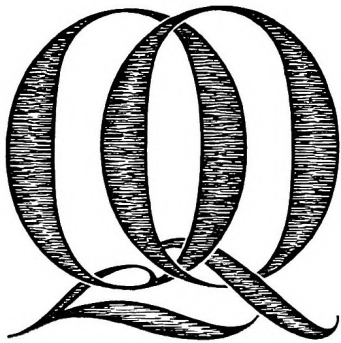
PY



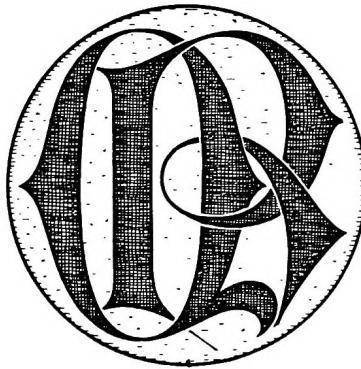
YP



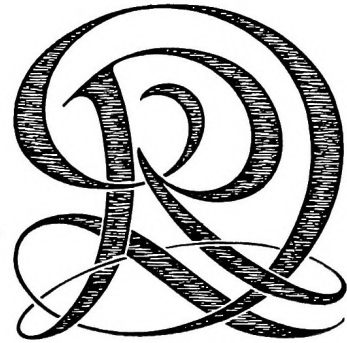
PZ



QQ



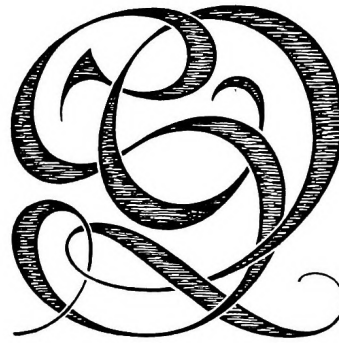
QR



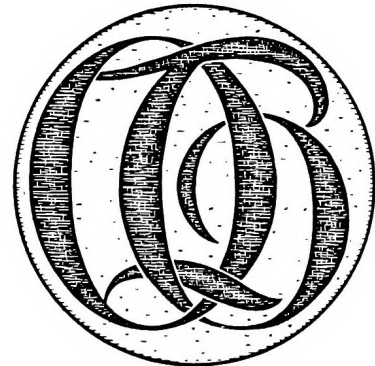
RQ



QS



SQ



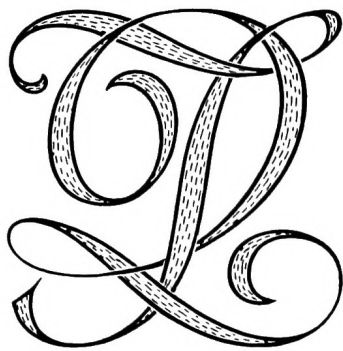
QT



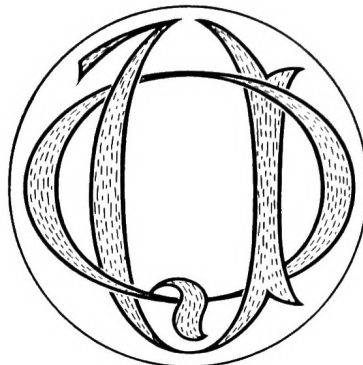
PLATE CII—PY, PZ, QQ, QR, QS, QT



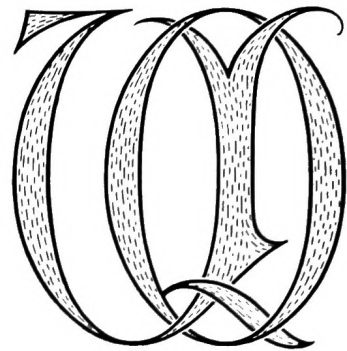




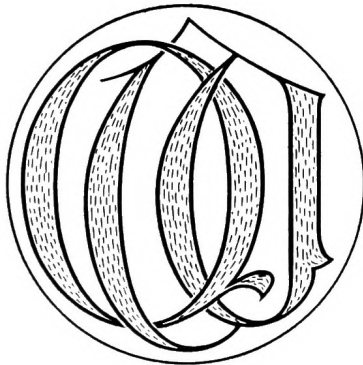
TQ



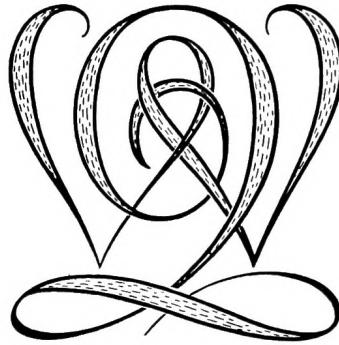
QU



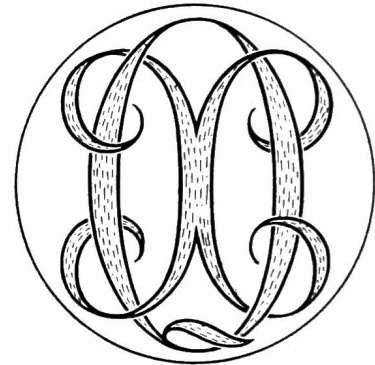
UQ



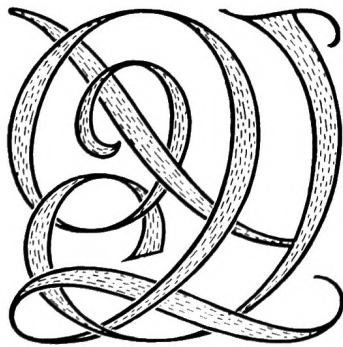
QW



WQ



QX



QY



YQ

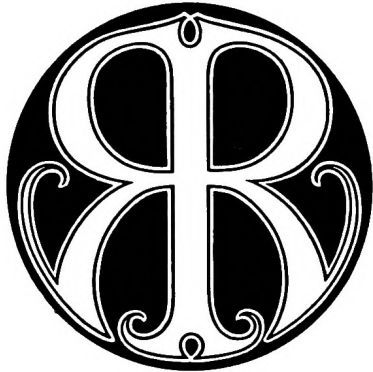


QZ

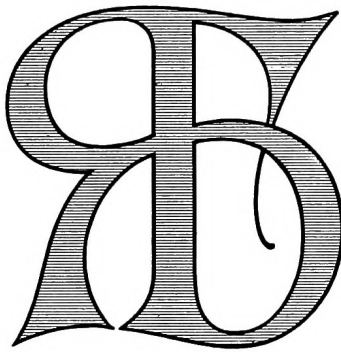


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PLATE CIII—QT, QU, QW, QX, QY, QZ



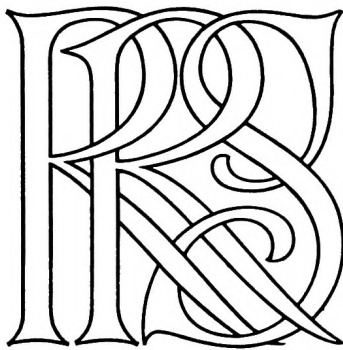
RR



RS



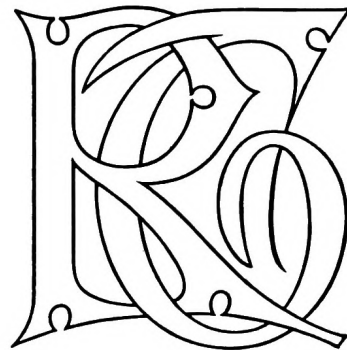
SR



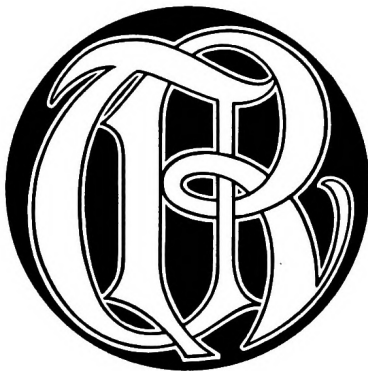
RRS



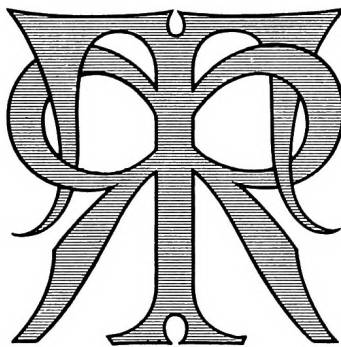
SSR



RT



TR



RRT



TTR

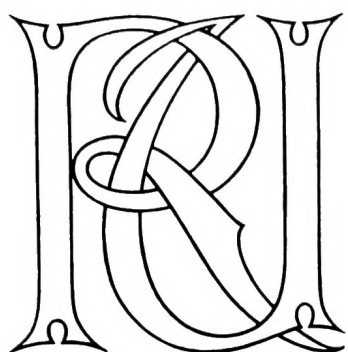


PLATE CIV—RR, RS, RT

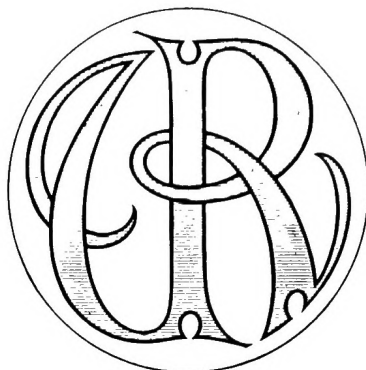




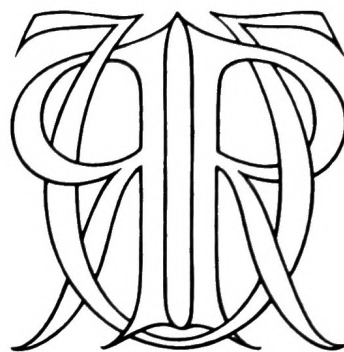




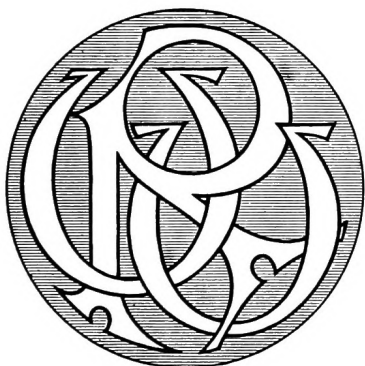
RU



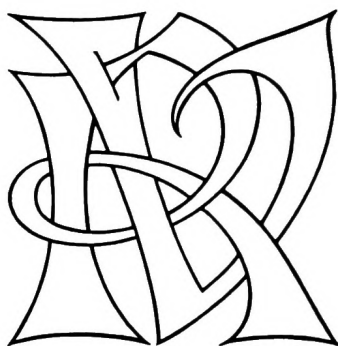
UR



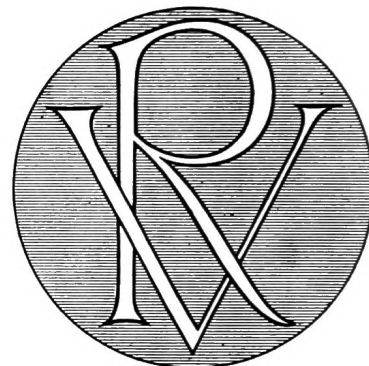
RRU



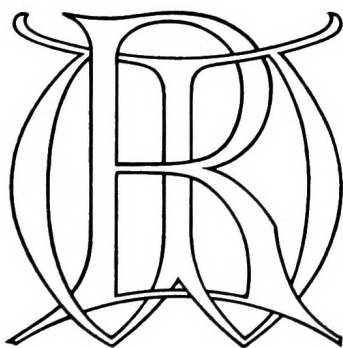
UUR



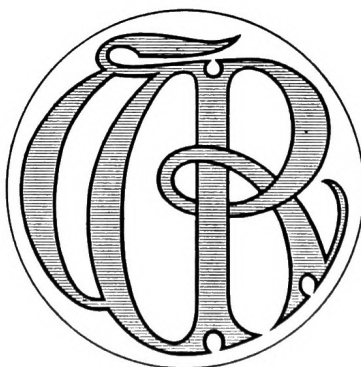
RV



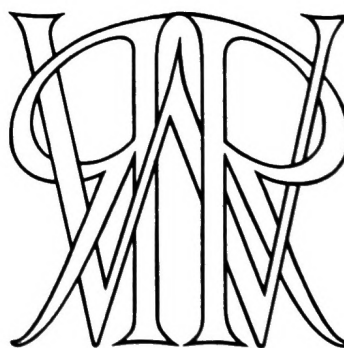
VR



RW



WR



RRW

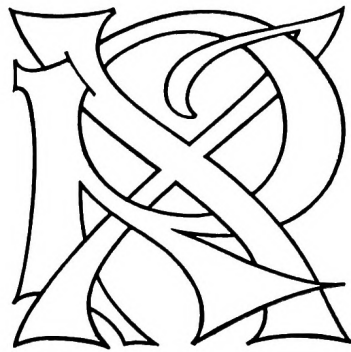
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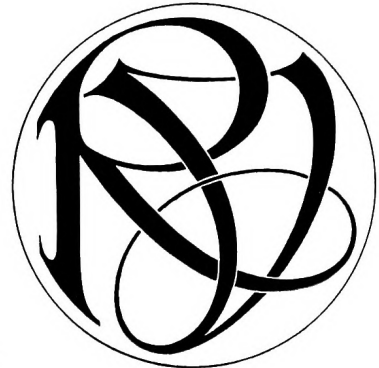
PLATE CV—RU, RV, RW



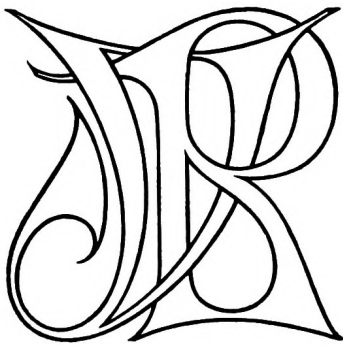
WWR



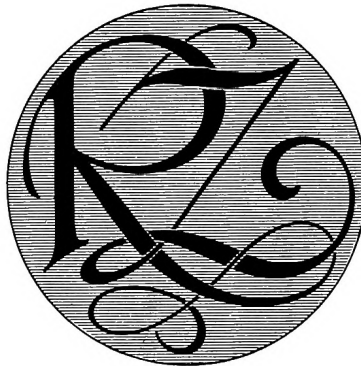
RX



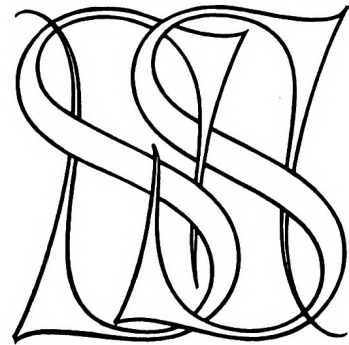
RY



YR



RZ



SS



ST



TS



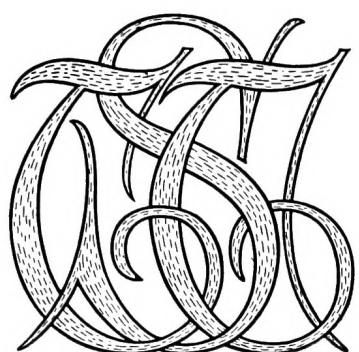
SST



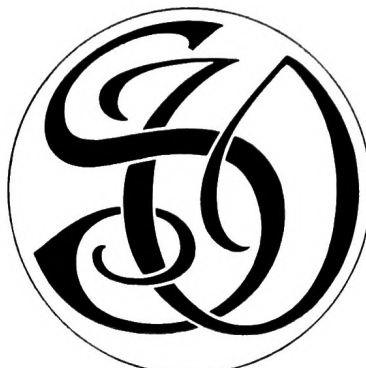
PLATE CVI—RW, RX, RY, RZ, SS, ST



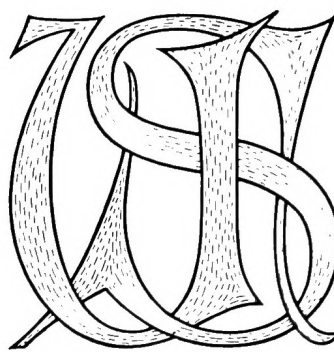




TTS



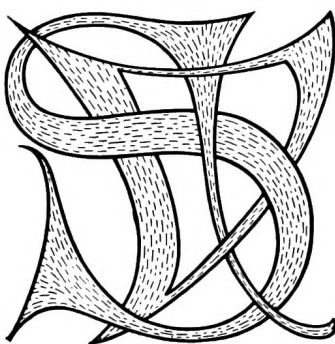
SU



US



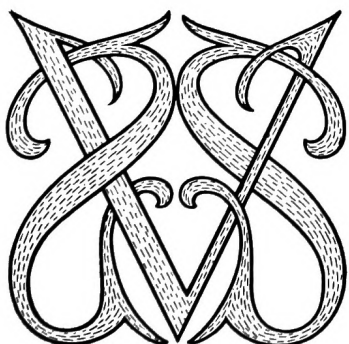
USS



SV



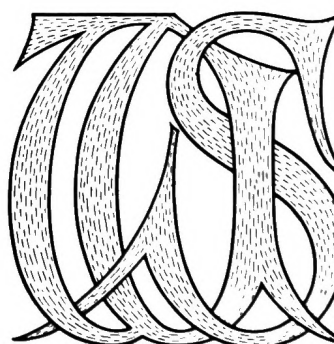
VS



SSV



SW



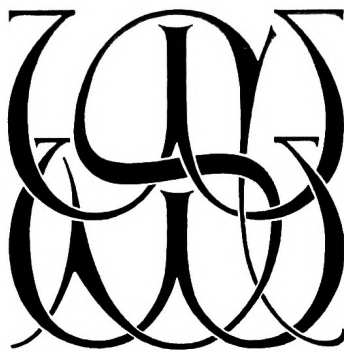
WS



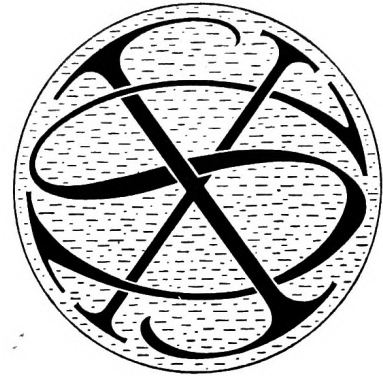
PLATE CVII—ST, SU, SV, SW



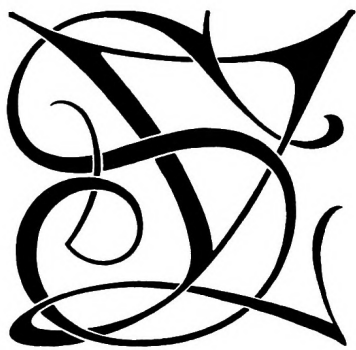
SWS



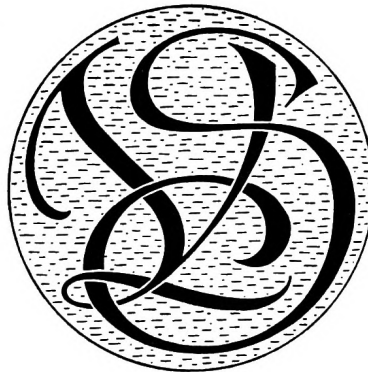
WWS



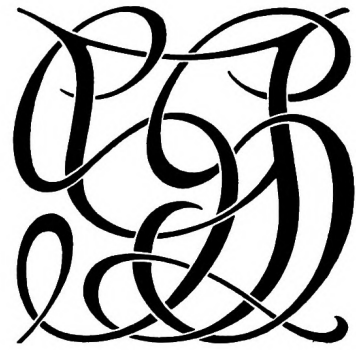
SX



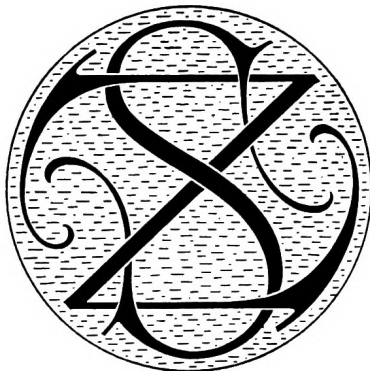
SY



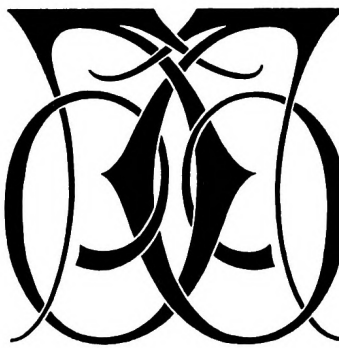
YS



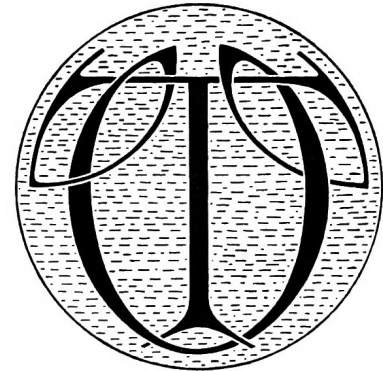
SYS



SZ



TT



TU

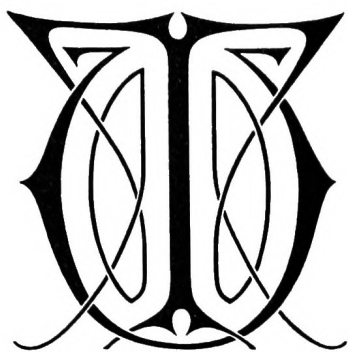


PLATE CVIII—SW, SX, SY, SZ, TT, TU

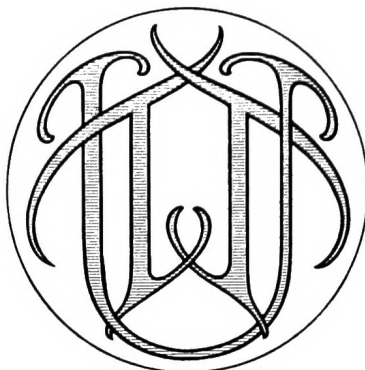




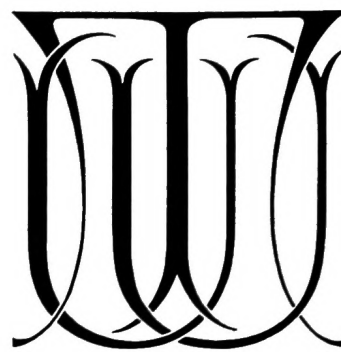




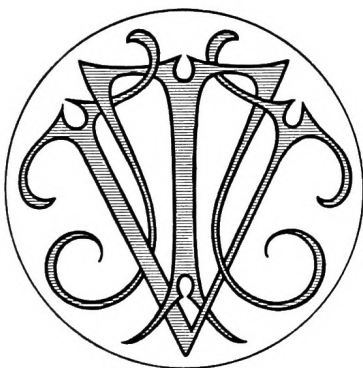
UT



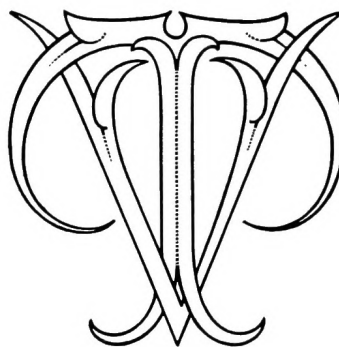
TTU



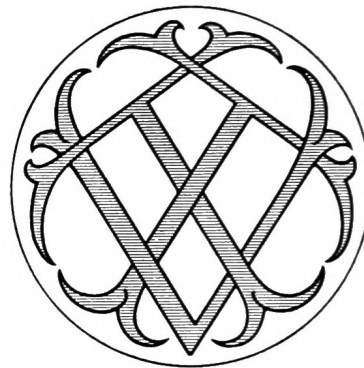
UUT



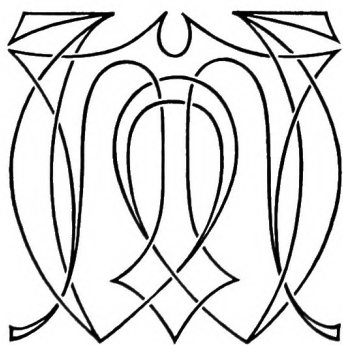
TV



VT



TTV



TW



WT



TTW

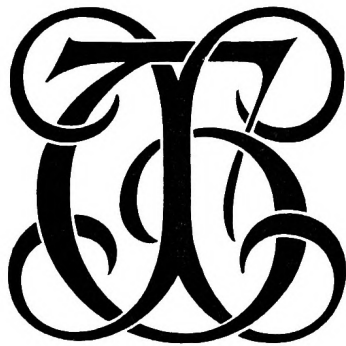
⓪

⓪

PLATE CIX—TU, TV, TW



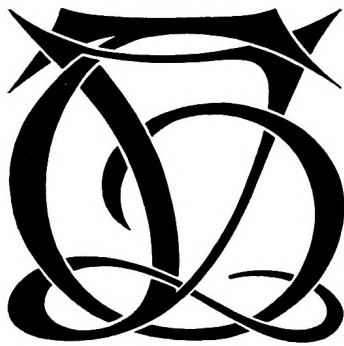
WTW



TX



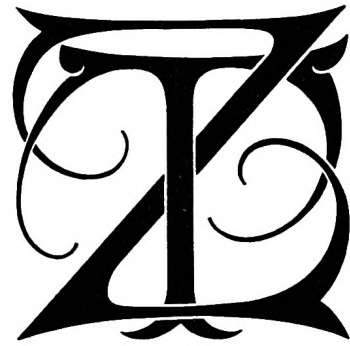
TY



YT



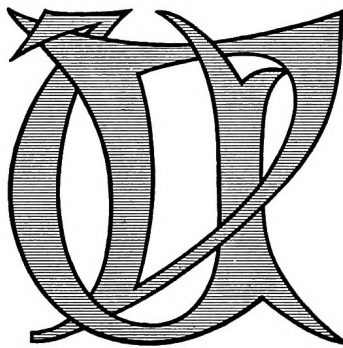
TTY



TZ



UU



UV



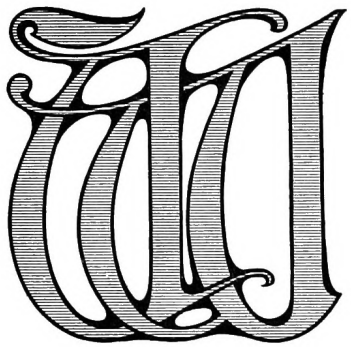
VU



PLATE CX—TW, TX, TY, TZ, UU, UV



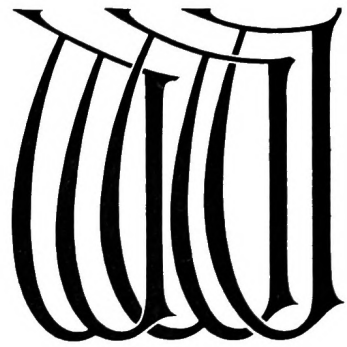




UW



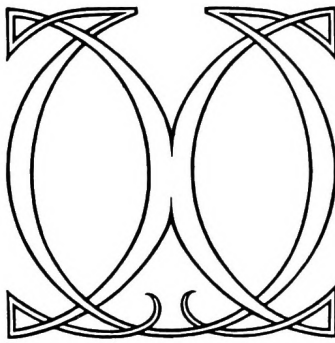
WU



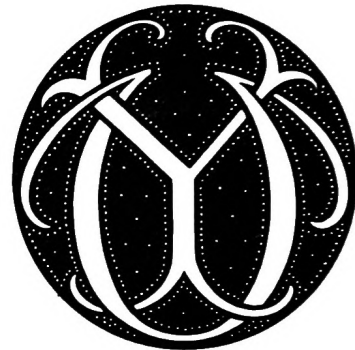
WWU



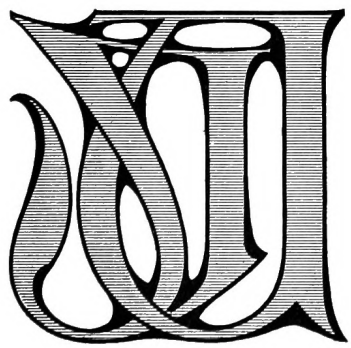
UUW



UX



UY



YU



UZ



VV



PLATE CXI—UW, UX, UY, UZ, VV



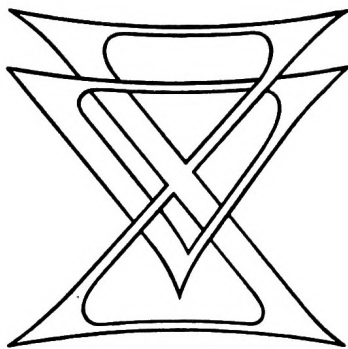
VW



WV



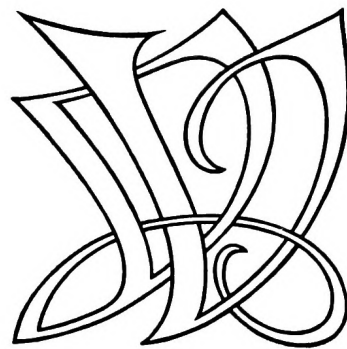
WWV



VX



VY



YV



VZ



WW



WX



PLATE CXII—VW, VX, VY, VZ, WW, WX





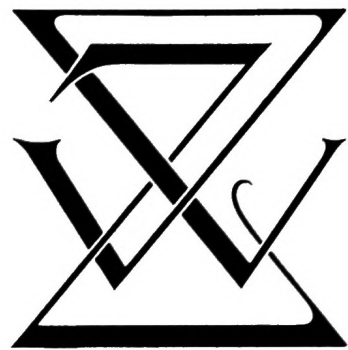




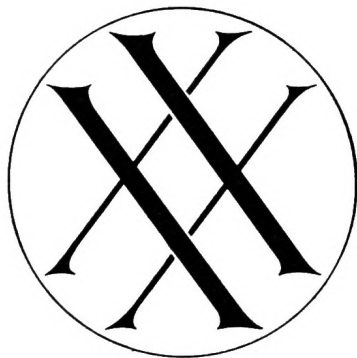
WY



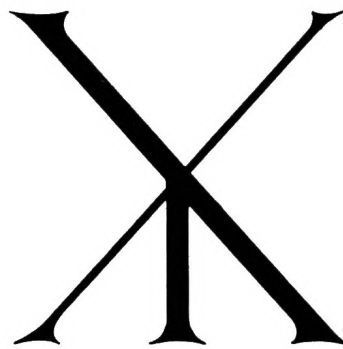
YW



WZ



XX



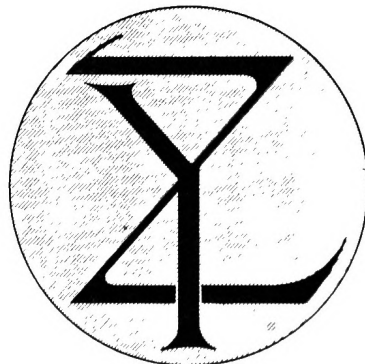
XY



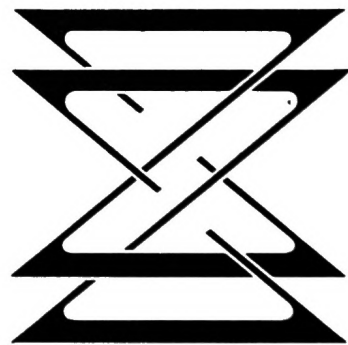
XZ



YY



YZ



ZZ

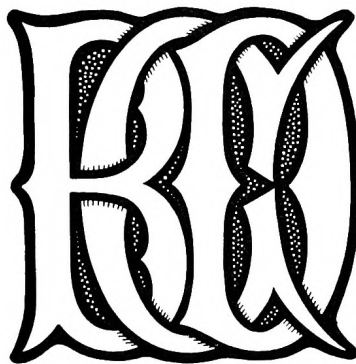
Ⓢ

Ⓢ

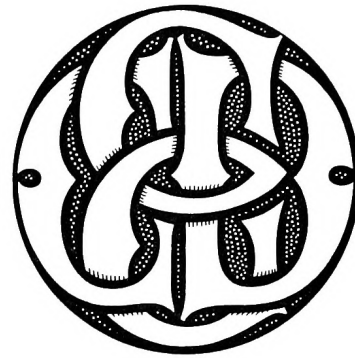
PLATE CXIII—WY, WZ, XX, XY, XZ, YY, YZ, ZZ



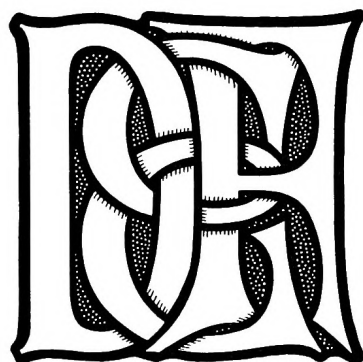
ABC



BCD



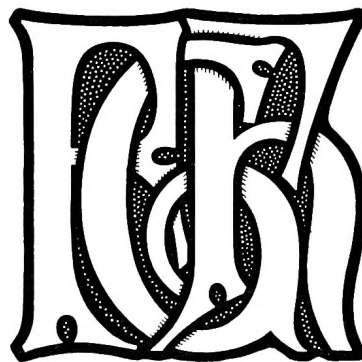
CDE



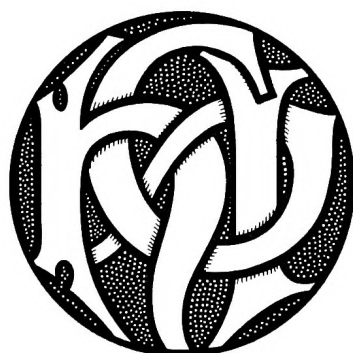
DEF



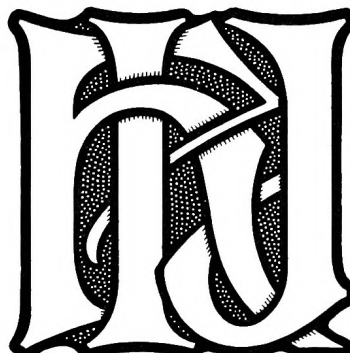
EFG



FGH



GHI



HIJ



IJK



PLATE CXIV—THREE-LETTER CIPHERS



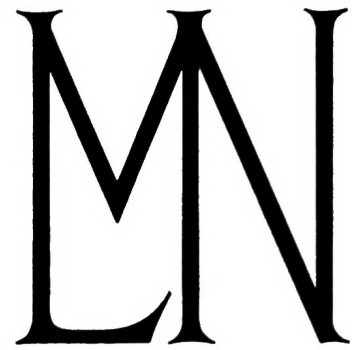




JKL



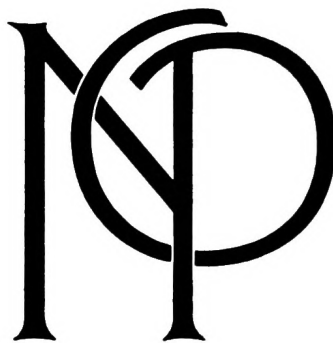
KLM



LMN



MNO



NOP



OPQ



PQR



QRS



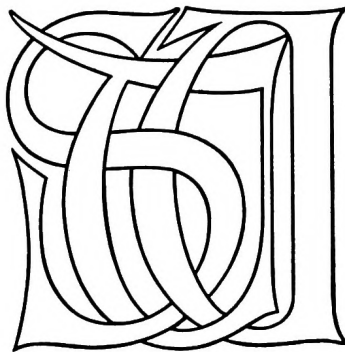
RST



PLATE CXV—THREE-LETTER MONOGRAMS



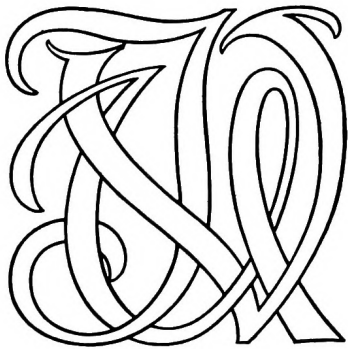
STU



STU



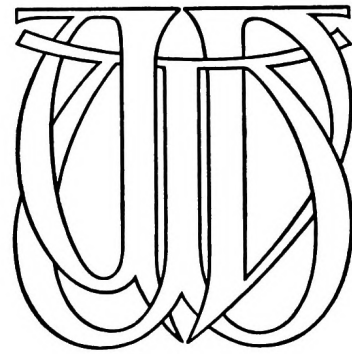
TUV



TUV



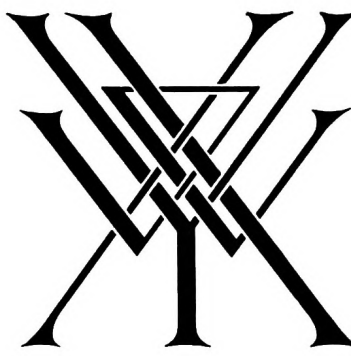
UVW



UVW



VWX



WXY



XYZ



PLATE CXVI—THREE-LETTER CIPHERS AND MONOGRAM









A&B



B&A



B&C



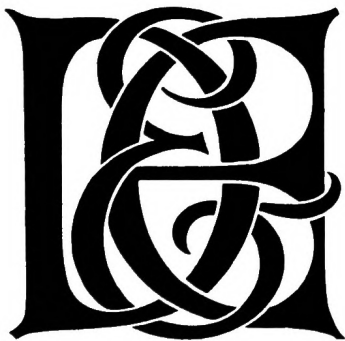
C&B



C&D



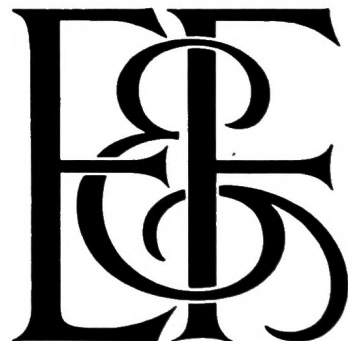
D&C



D&E



E&D



E&F

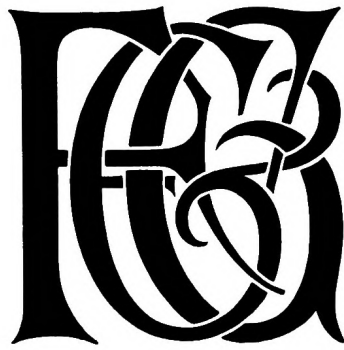
Ⓢ

Ⓢ

PLATE CXVII—TWO LETTERS WITH THE &



F&E



F&G



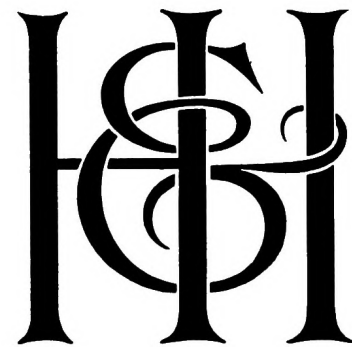
G&F



G&H



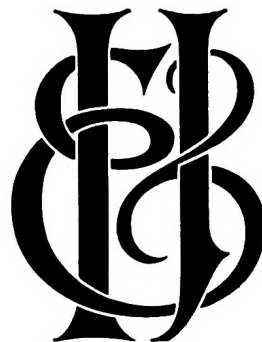
H&G



H&I



I&H



I&J



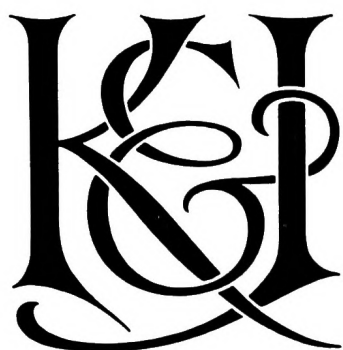
J&K



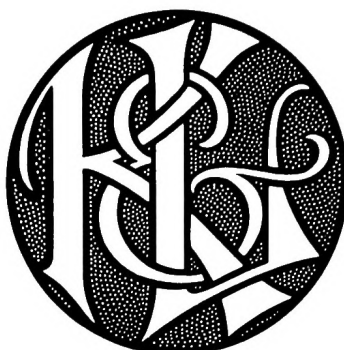
PLATE CXVIII—TWO LETTERS WITH THE &







K&J



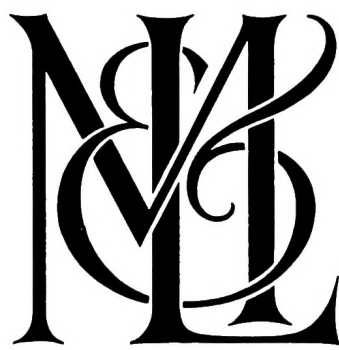
K&L



L&K



L&M



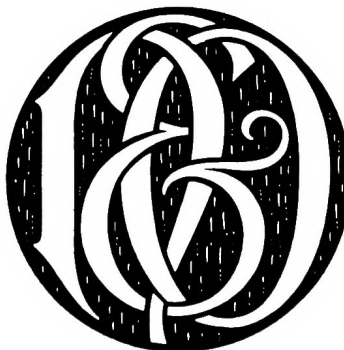
M&L



M&N



N&M



N&O



O&N



PLATE CXIX—TWO LETTERS WITH THE &



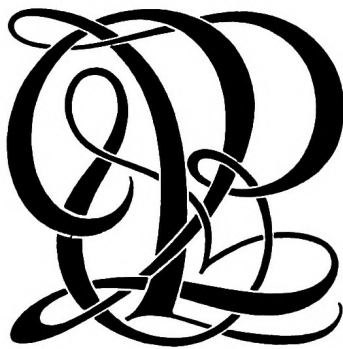
O&P



P&O



P&Q



Q&P



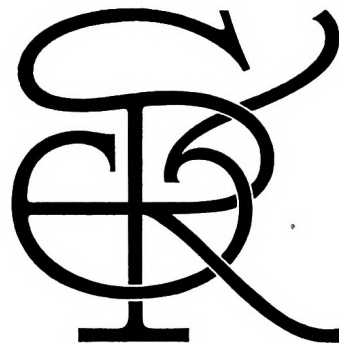
Q&R



R&Q



R&S



S&R



S&T



PLATE CXX—TWO LETTERS WITH THE &









T & S



T & U



U & T



U & V



V & U



V & W



W & V



W & X



Y & Z

11

6

PLATE CXXI—TWO LETTERS WITH THE &



A & C<sup>o</sup> L<sup>d</sup>.



A & C<sup>o</sup>



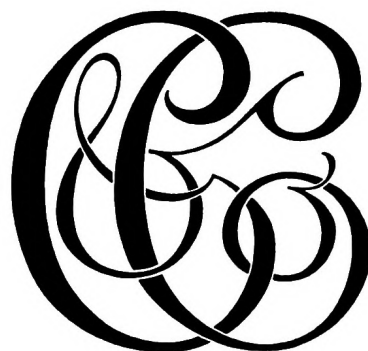
B & C<sup>o</sup>



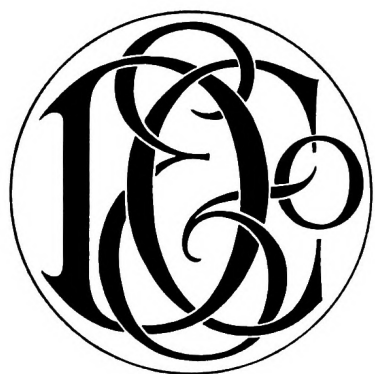
B & C<sup>o</sup>



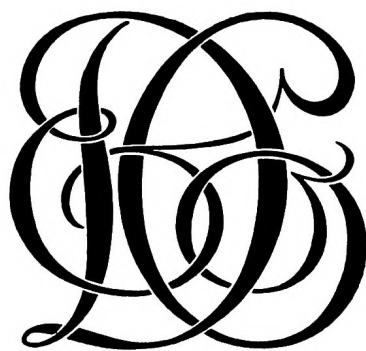
C & C<sup>o</sup>



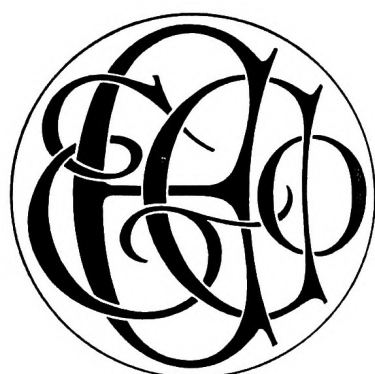
C & C<sup>o</sup>



D & C<sup>o</sup>



D & C<sup>o</sup>



E & C<sup>o</sup>



PLATE CXXII—COMPANY CIPHERS







E & Co



F & Co



F & Co



G & Co



G & Co



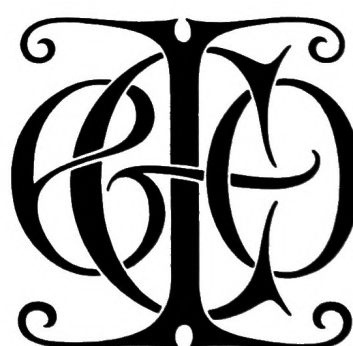
H & Co



H & Co



I & Co



I & Co



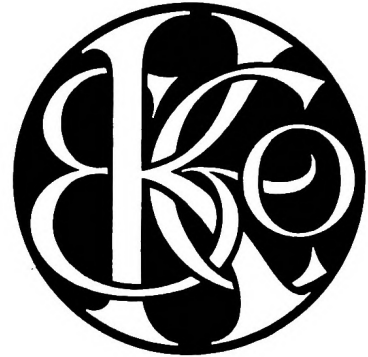
PLATE CXXIII—COMPANY CIPHERS



J&C



J&C



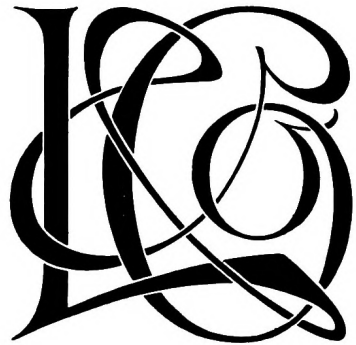
K&C



K&C



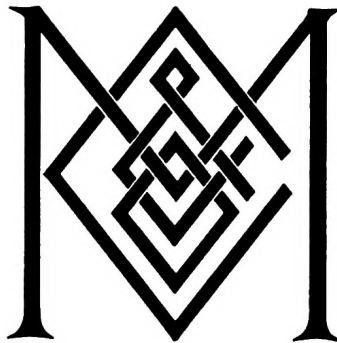
L&C



L&C



M&C



M&C



N&C

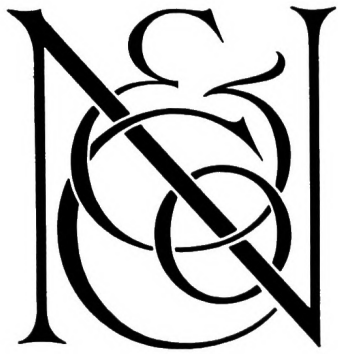


PLATE CXXIV—COMPANY CIPHERS









N & C



O & C



O & C



P & C



P & C



Q & C



Q & C



R & C



R & C



PLATE CXXV—COMPANY CIPHERS



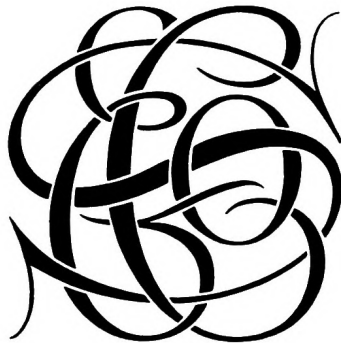
S & Co



S & Co



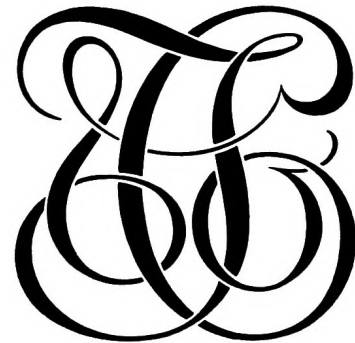
S & Co



S & Co



T & Co



T & Co



U & Co



V & Co



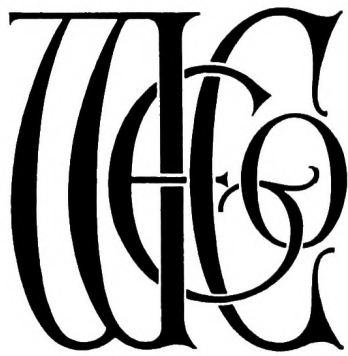
W & Co



PLATE CXXVI—COMPANY CIPHERS







W & Co



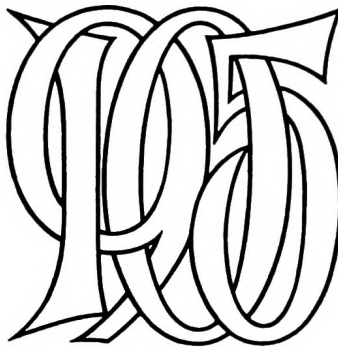
X & Co



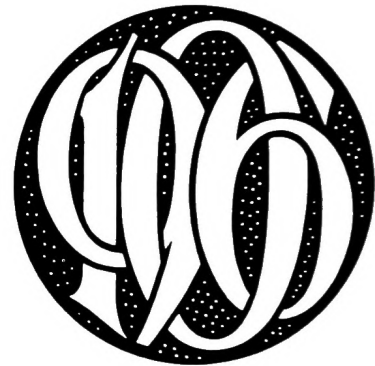
Y & Co



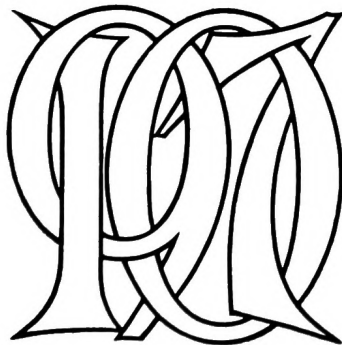
Z & Co



1905



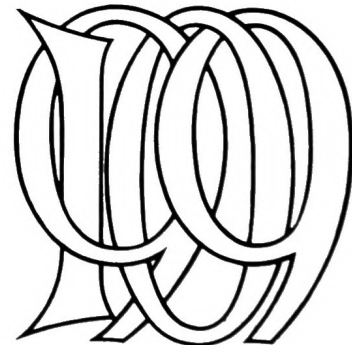
1906



1907



1908



1909

Ⓢ

6

PLATE CXXVII—COMPANY CIPHERS, YEARS



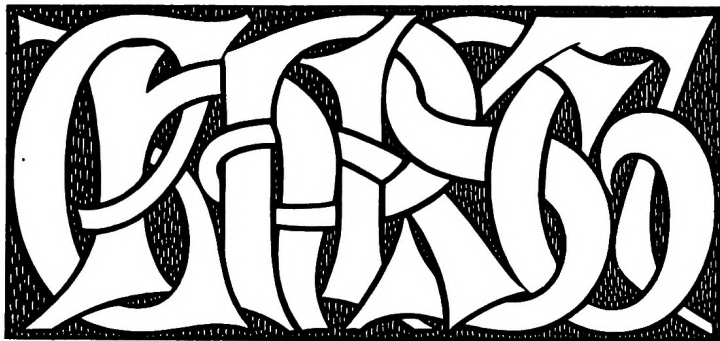
IHS



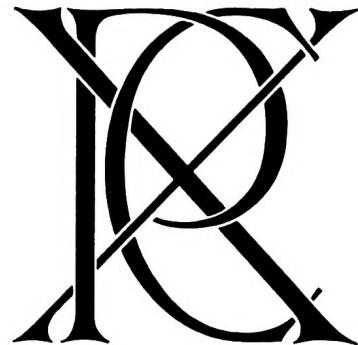
IHS



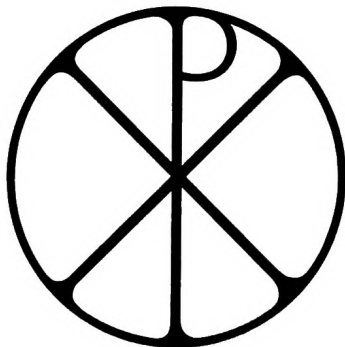
XP·ΑΩ



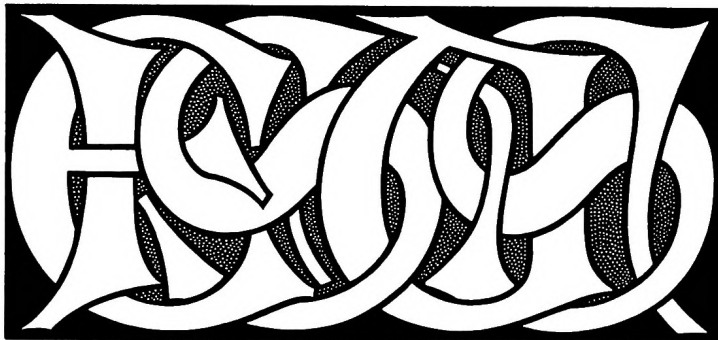
CHRIST



XPC



XP



JESUS

Ⓢ

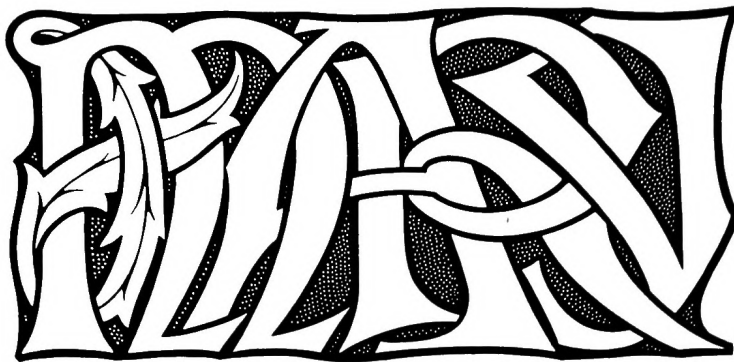
Ⓢ

PLATE CXXVIII—SACRED DEVICES

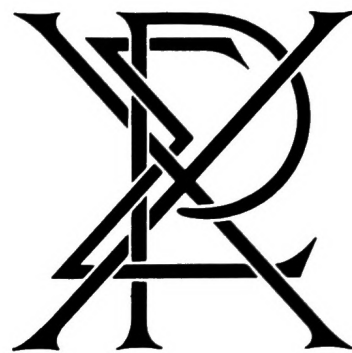








MARY



XPS



XPC



JOSEPH



INRI



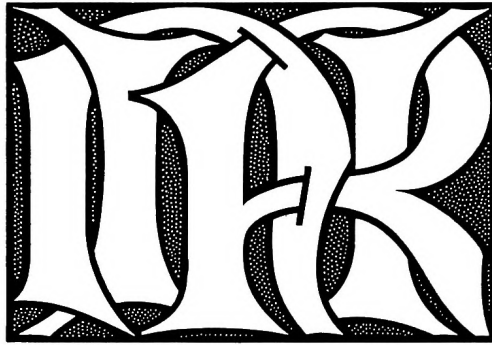
IHS



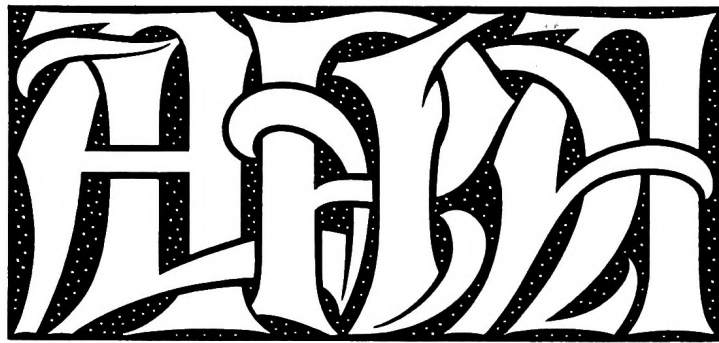
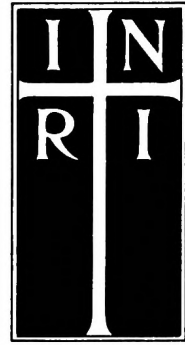
PLATE CXXIX—SACRED DEVICES



ΑΩ



INRI



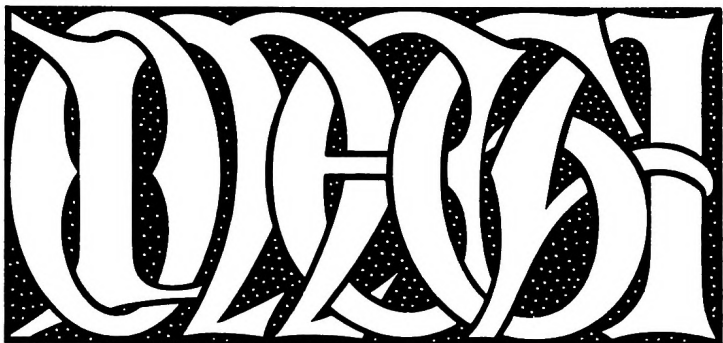
ALPHA



ΑΩ



ΑΩ



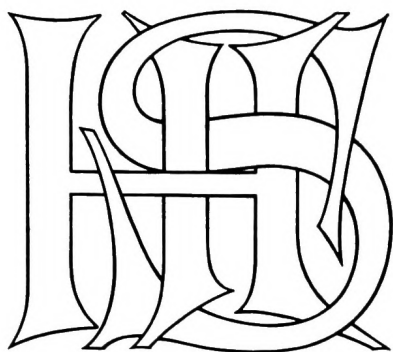
OMEGA



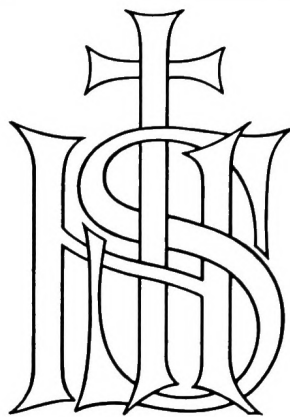
PLATE CXXX—SACRED DEVICES



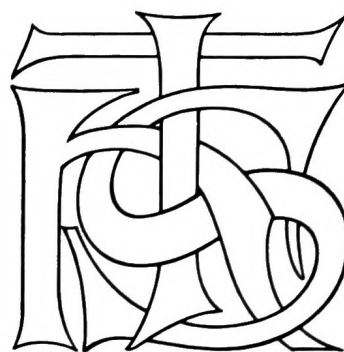




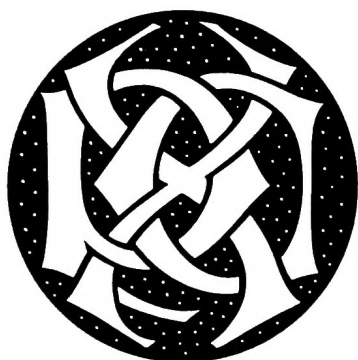
IHS



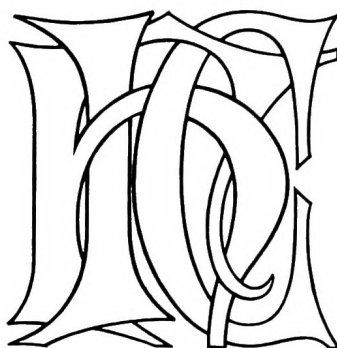
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IHS



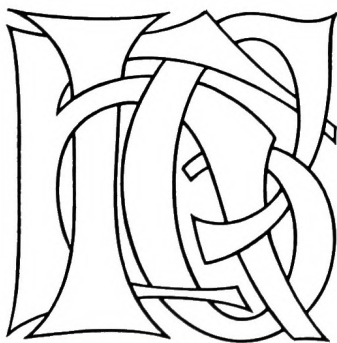
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IHC



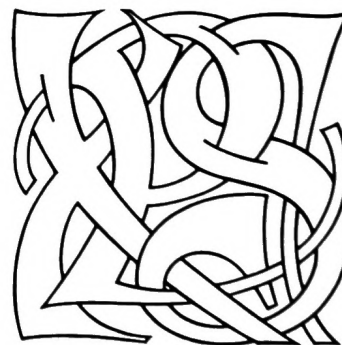
IHC



IHC



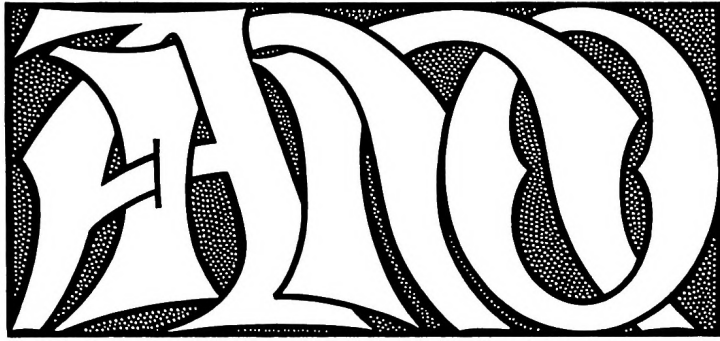
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XPS



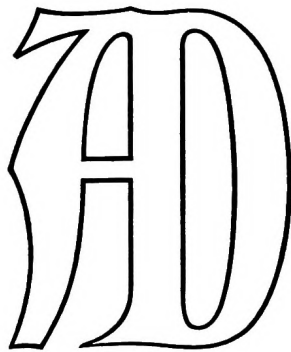
PLATE CXXXI—SACRED DEVICES



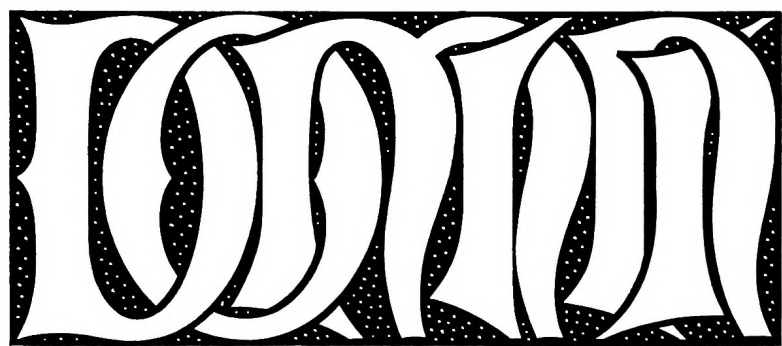
ANNO



AD



AD



DOMINI



AD



AD



AD



PLATE CXXXII—SACRED DEVICES

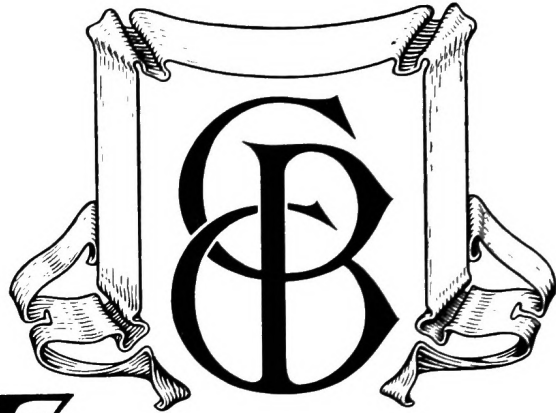








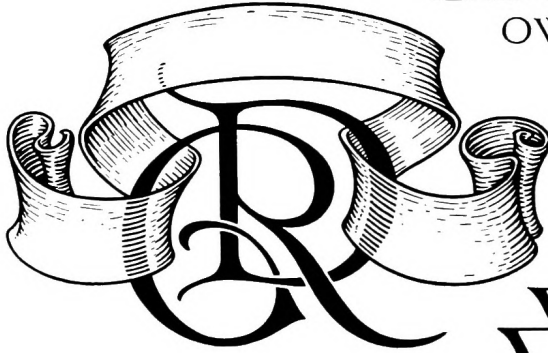
JRL



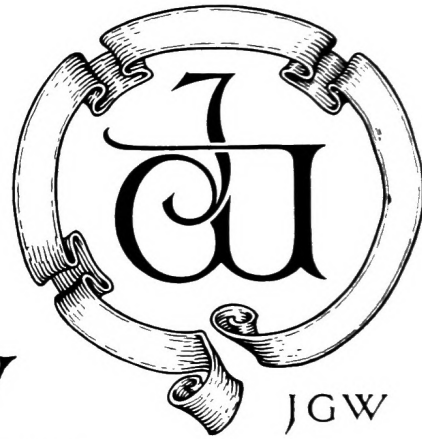
GGB



OWH



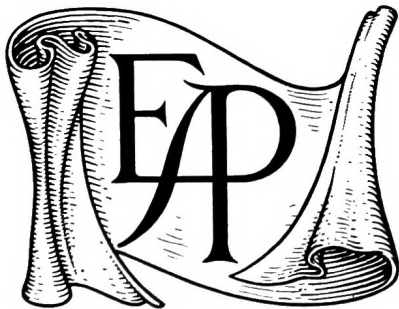
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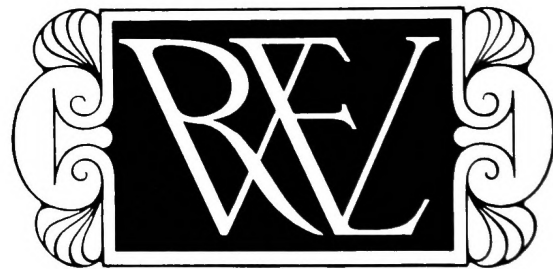
JGW



FWF



EAP

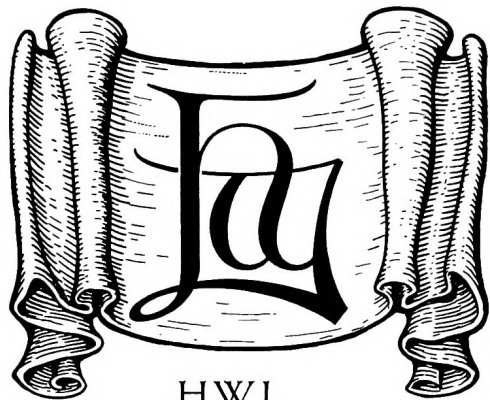


RWE

Ⓢ

Ⓢ

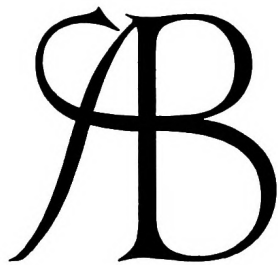
PLATE CXXXIII—LABELS AND MONOGRAMS



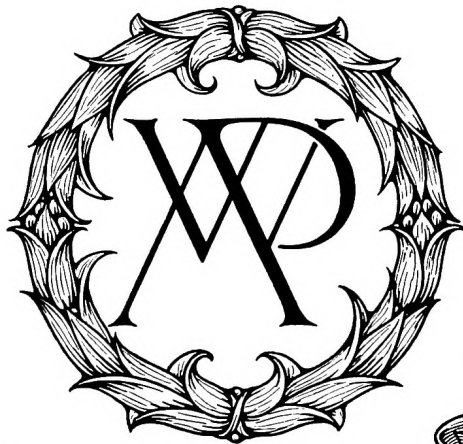
HWL



JRG



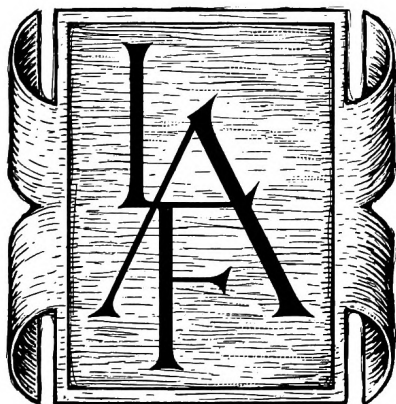
SAB



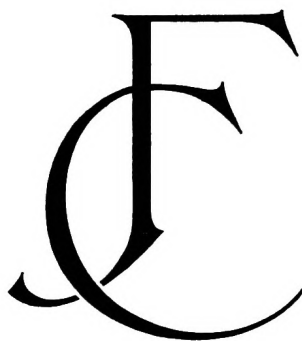
AWP



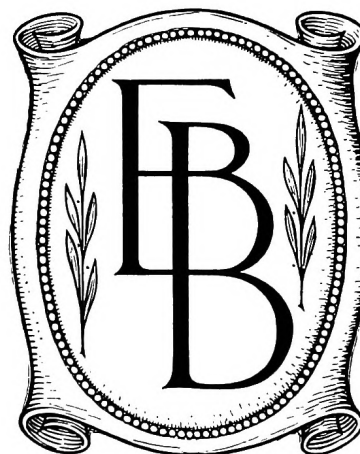
JAF



LFA



JFC



EBB



PLATE CXXXIV—LABELS AND MONOGRAMS





GRAN·EX-

ELSS·EOLAS

EOD·AD·AINO

DOMIN·ABOOS

E·VENE·V

Ⓢ

Ⓒ

PLATE CXXXV—SACRED DEVICES

EDINBURGH  
T. and A. CONSTABLE  
Printers to His Majesty





# Alphabets & Numerals



## PREFATORY NOTE

**I**N preparing these plates for publication I have had in mind the need I felt for such a series of examples when I began the exercise of my profession some years ago. The want of good examples of severe readable types induced me to make a search for the same, and this search led me back to the early manuscripts and printed books. In my hunt for material I soon became fascinated with the subject, and came to feel keenly a preference for the simpler forms in letters, in manuscripts those with the least flourish. The plates of letters given in the following pages are a few of the forms I have constructed and selected from my studies and trial alphabets.

These are some of the simpler forms, and those which have been the most successful in the various classes of work I have been called upon to do. These plates have not been designed as models for printing types, but

*b*

ix

## ALPHABETS AND NUMERALS

as examples for the designer or craftsman to copy, alter, and arrange in their handicraft after their own fancy. My letters will again assume a variety of new forms in the course of interpretation, for I believe that no two hands will copy a letter exactly, for lettering is as subtle in its likeness as the human face. The drawing of letters too is like the drawing of the human face, there is a very short step between likeness and caricature.

Most of the lettering we find in the ornament of to-day is a caricature of some well-known form. I do not hold with the old style in the drawing of the Arabic figures, such as the short 1, 2, and o, the ascending 6 and 8, and the descending 3, 4, 5, 7, and 9. These may look in place with the lowercase letters, but in the midst of capitals they disfigure the piece of work. I have made my numerals to line with the capitals. With decorative work capitals are more generally used ; if the designer prefers, in a case where the small letters are to be used, to employ the old style figures, the alteration of my model is a trifling matter. In designing the

## PREFATORY NOTE

Ampersand, &, I have tried in all instances to convey clearly both the E and T.

The T may be smaller than the E, but the general proportion of the character should, I feel, line with the capitals. Of spacing I have said nothing, the laws are so arbitrary, depending almost entirely on place, words, and combinations, that the few rules I have evolved for myself I do not feel it would be safe to give. Such rules as may be useful had better be thought out by the artist or craftsman to meet the individual needs of his own work. The eye is a more sure guide in this matter than any firm and fast rule could be.

A. A. TURBAYNE.

CARLTON STUDIO,  
LONDON, *August* 1904.



# NOTE ON THE PLATES

A





## ROMAN—PLATES I, II

**A**LPHABET of Capitals founded on the letters of the inscription on the base of Trajan's Column, Rome, erected between 106 and 110 A.D. The characters not given in the inscription are supplied, together with the Æ, Œ, and &.

This alphabet, though following the Trajan letters closely, has many points of variance. There is more difference in the proportion of the thick and thin strokes than in the original. My letters A and V are wider. The letters M and N of the inscription are without serifs on the upper angles; this makes the M, which has slanting outer strokes, look like a W upside down. The N also, at a first glance, appears to be upside down. I have drawn besides the spreading M, one built square, as this will be found in most cases the better shape for spacing.

The Trajan C and G have an angular square appearance, and the S looks as if falling forward; with all of these letters I have taken great liberty, which I feel from a very considerable experience in the drawing and placing

## ALPHABETS AND NUMERALS

of letters to be necessary for modern use. I have given my O and Q much more slant, and in the final stroke or tail of the Q and R there is a double curve.

There are two points in the Trajan letter which I have made much of. Take for instance the second P of the word POPVLVSQVE; there is at the top of the letter a slight depression, probably accidental on the part of the sculptor, as it occurs only in a few places. A very subtle curve will also be found in many of the serifs, either concave or convex. These points add greatly, I think, to the beauty of the letter, and will be found exaggerated throughout my alphabet, in the top and bottom of the B and D, the top of the P and R, and in the serifs of the upright and horizontal strokes.

## ROMAN—PLATES III, IV

Capitals and Numerals based on the inscription on the monument of the Emperor Henry VII (Henry of Luxembourg) in the Campo Santo, Pisa, by Tino di Camaino, a pupil of Giovanni Pisano, dated 1315. Many of the letters of this inscription are superior in form to

## PLATES III, IV

those of the Trajan inscription. The round letters are fuller and more smoothly rounded. The S is well balanced, though there is here again a tendency to top-heaviness, due to the lower portion of the letter not being made sufficiently larger than the upper part. The M and N are well shaped, and have bold sweeping serifs. There are two distinct forms of T, one with the serifs of the cross stroke turned in, the other with the serifs turned to the right. The left serif is slightly longer than the right. This point I have followed in the drawing of the T, though I have turned both serifs to the left for preference.

In planning these two plates I have made the letters slightly heavier, and while making of it a new type, have tried to preserve all of the small points of character found in the original. The points I refer to are, the slant of the serif of the letter A; the straight lower serif of the C and the slanting upper one; the slight dip in the lower right serif of the E and L. Further points slightly exaggerated are, the elongation of the serif of the straight stroke of the G, running in toward the body; the long upper left serifs of the M and N, and the little turn at the base of the middle strokes of the M, and on the right foot of the N. One or two of these points owe their

## ALPHABETS AND NUMERALS

origin in the inscription to a slip of the chisel, for they are not repeated throughout the text; they are worth preserving though as suggesting a character.

The numerals are designed to go with the capitals, and were planned on some of the prominent features of the capitals.

## ROMAN—PLATES V, VI, VII, VIII CAPITALS, SMALL LETTERS, AND NUMERALS

Some years ago I made for a special alphabet careful parallel studies of the types of Joannes Spira and Nicolas Jenson, from the editions of Pliny, printed at Venice. That of Spira in 1469, Jenson's in 1476. And from Cicero's Epistles, printed by Jenson in 1470. These four plates of letters and numerals owe their general proportions to those original drawings. Since those studies were made, however, I have planned many alphabets on the same base, testing the value of my model by applying it to work in hand. The letters as they appear in my plates are the best of the essays, and are, I think, different in detail from any existing type, though following closely on the original models.

## PLATES V, VI, VII, VIII

Of the original models there is considerable difference, when the types of Spira and Jenson are compared side by side.

The letters of Spira, generally, are wider than those of Jenson, and there is more difference in the proportion of the thick and thin strokes. The greatest difference is found in the M and lowercase h. Spira's M is very wide, with slanting outer strokes and long serifs; his h is of the Gothic form, the second stroke looped in and without serif, and looks in the page like a letter of another fount. Jenson's M has upright outer strokes, but, like Spira's, the serifs on the top are long, and extend likewise beyond the angles on the inner side. I have given both forms of M, but cut my upper serifs off on the inner side of the angles with a slight curve.

The top serifs of Spira's lowercase letters b, d, h, i, l, m, n, p, and u, are more slanting than Jenson's; there is also a very slight slant to the lower serif of some of his letters, f, i, l, the f like s, and on the last stroke of the m and n.

Jenson has two forms of p and q, one with the lower serif horizontal, the other with a slight slant, but

## ALPHABETS AND NUMERALS

I don't find in his letters, where we are accustomed to find a horizontal serif, the peculiar slant found in the Spira letters mentioned above. There are many other minor points of difference in the two types described, points which the student, intent on designing a letter of his own, will be more interested in than the artist or craftsman for whom these plates have specially been drawn.

Of the lesser points of difference, but which count in the making of a letter, we find that Spira's E has a long thin slanting serif on the middle horizontal, or waist stroke. The O is upright, the P has an open loop, somewhat like the capital P on plate III. The serifs of the cross stroke of the T slant out.

In Jenson's capitals the O is slightly tilted, while the serifs of the horizontal stroke of his T both slant to the left. Of the types of the two printers, Jenson's is more of one style, it is cleaner cut, and there is less variety in the form of his serifs. Spira's fount is very irregular, though taken separately the letters are well formed. There are several styles of serif, flat and bracketed, and too many small points which counterfeit a pen-drawn letter for a good clean type.

In the designing of my four plates, I have taken

## PLATES IX, X

suggestions freely from both types, at the same time producing a new letter.

My serif I would describe as flat, half bracketed ; that on plates I and II as a curved, sharp, full bracketed serif ; and on plates III and IV as a straight, sharp, full bracketed serif. I have given two forms of the capitals M, R, and U. Where a certain quaintness is required, the first U will be found the better one to use. The same may be said of the spreading M, and the R with the long third stroke, which stroke may be lengthened or shortened as its decorative effect in a word or line may decide.

## GOTHIC—PLATES IX, X

I have found this capital a valuable one in the designing of monograms and ciphers ; for title, motto, or inscription, where a bold letter of this style is required to fill a panel or label, especially when it is in white or a light colour on a dark ground, or where it is to be cut in relief. The general proportion of the letter is that of many of the illuminated initials found in manuscripts of

## ALPHABETS AND NUMERALS

the fifteenth century. My base was an alphabet from the *Champfleury* of Geofroy Tory, printed at Paris in 1529. It appears on the reverse of sig. O, III, or leaf LXXV. Cut the flourishes off Tory's letter and you come pretty near my model. There is a crude boldness in the form, and an unevenness in the drawing of the thick stroke and its swelling to serif which is pleasing in ornament, and which cannot be got in a smooth, more even style of Gothic.

## GOTHIC—PLATES XI, XII, XIII, XIV

A condensed Gothic, with curved serifs, pointed and bracketed. This letter is a later rendering of the alphabet of the two preceding plates. I have compressed the letters slightly to allow a more compact working. To make the letter more legible for modern use, several forms have been introduced approaching Roman, such as the square E, the G and K. I have separated more of the closed serifs, as in the round E, the F and M, and the round T. This I began with the C on plate IX. In designing these plates I was influenced strongly by certain small points in the letters of plates I and II, though there



## PLATES XV, XVI, XVII, XVIII

may appear to many little resemblance in the two forms of letter.

This influence was further felt when I began work on my small letters, with the result that many are reduced almost to Roman.

The designer of to-day must sacrifice many fine old forms of letter for the sake of legibility. This applies specially to commercial work of every sort. For this reason I give a choice of forms of several of my letters, if one does not answer the other probably will. The use of two forms of the same letter in one piece of work should in most cases be avoided.

## GOTHIC—PLATES XV, XVI, XVII, XVIII

These four plates of condensed Gothic, with flat, half-bracketed serifs, are an attempt to produce a letter of this style as crisp and easily read as the Alphabet of plates v to viii. There remain in the letter some suggestions of an original pen form. This will be noticed in the sweep of the thick portion of a stroke, and the ending of certain bars and serifs. There are many classes of

## ALPHABETS AND NUMERALS

decorative work where a Gothic letter is required, but where such a letter must be easily and quickly read. This difficulty I have had to meet over and over again, and the Alphabet and Numerals here given are the result of many attempts to produce a satisfactory form.

There are extended strokes and serifs which may be objected to; the designer can alter those to suit his own fancy. For the many purposes for which I have had to plan such letters, these lengthened portions have given line and balance, and a strength which is lacking in much of the decorative work of our day. A comparison of these four plates with the six preceding ones will show how one form has suggested another.

## ITALIC—PLATES XIX, XX, XXI, XXII

In these four plates of Italic there is a feeling throughout of the use of a blunt pen or brush. It is a form of letter much in demand at the present time for Poster and Advertisement display letter, and the irregularity of its usual shape lends itself to a quicker working than the clean cut well-formed Roman, with nicely shaped

## PLATES XXIII TO XXVII

serifs. My forms are a little more carefully drawn, and with more of the pen-stroke than the brush than is found in the class of letter I refer to. The more blunt and uneven the serif and body of the letter, the quicker it can be produced, and for much of the advertisement and other commercial design of to-day, in order to make his work pay, the artist has to adopt a type of letter that can be done quickly. With Italic, the swash letters assist greatly in the spacing, the flourishes helping to fill ugly gaps, such as would occur between LA, RA, etc. The sweep of these flourishes may be altered to suit the space between different letters. In many instances a stroke of the L, or R, carried below the line will also do away with an awkward space in a word.

## ITALIC—PLATES XXIII TO XXVII

These five plates of letters, approaching to Running-Hand, are founded on a series of studies made from the early sixteenth century Writing Books of Ludovico Vicentino, Ugo da Carpi, and Giovanni Battista Palatino.

## ALPHABETS AND NUMERALS

There is more slant in the letters here shown than in the original models, which are almost perpendicular.

Many of the originals, too, are redundant in flourish as suggested by my A and last & on plates xxv and xxvi. This superfluous ornament, though very quaint and beautiful in the old pages of these early books, will only do to-day in exceptional cases.

There are many trades where a cursive letter is in constant demand, such for instance as that of Sign-Writer or Copper-plate Engraver. In most cases the forms employed are very degenerate. I have had in my time to make drawings in this style for signs, cheques, share certificates, and all manner of design where the commission called for a script letter. In all of those instances I took my model from some one of the early sixteenth-century writing-books. The reception my several pieces of work met with has suggested to me that a series of examples of my own, based on these early works, would be welcome. I have given in my five plates sufficient of both lining and swash letters to make or suggest any possible combination.

# PLATES





A B C D

E F G H I

J K L M

N O P

PLATE I



Q R S T  
U V W -  
X Y Z Æ  
Œ G

PLATE II





A B C D

E F G H I

J K L M

N O P

PLATE III

Q R S T

U V W -

X Y Z G

1 2 3 4 5 6 7 8  
9 0

PLATE IV





A B C D

E F G H

I J K L M

N O P

PLATE V





PLATE VI





Aabcd:

Eefghij

Jklmno

Pppqrst

PLATE VII

U u v w : :  
♦ ♦

X x y z : : l  
♦ ♦

2 3 4 5 6

7 8 9 0 : :  
♦ ♦

PLATE VIII







PLATE IX





PLATE X







PLATE XI

Q R S T U

V W X Y

Z A B C

D E F G

PLATE XII





A abcd

Eefghi

Ijklmn

Oopqr

PLATE XIII



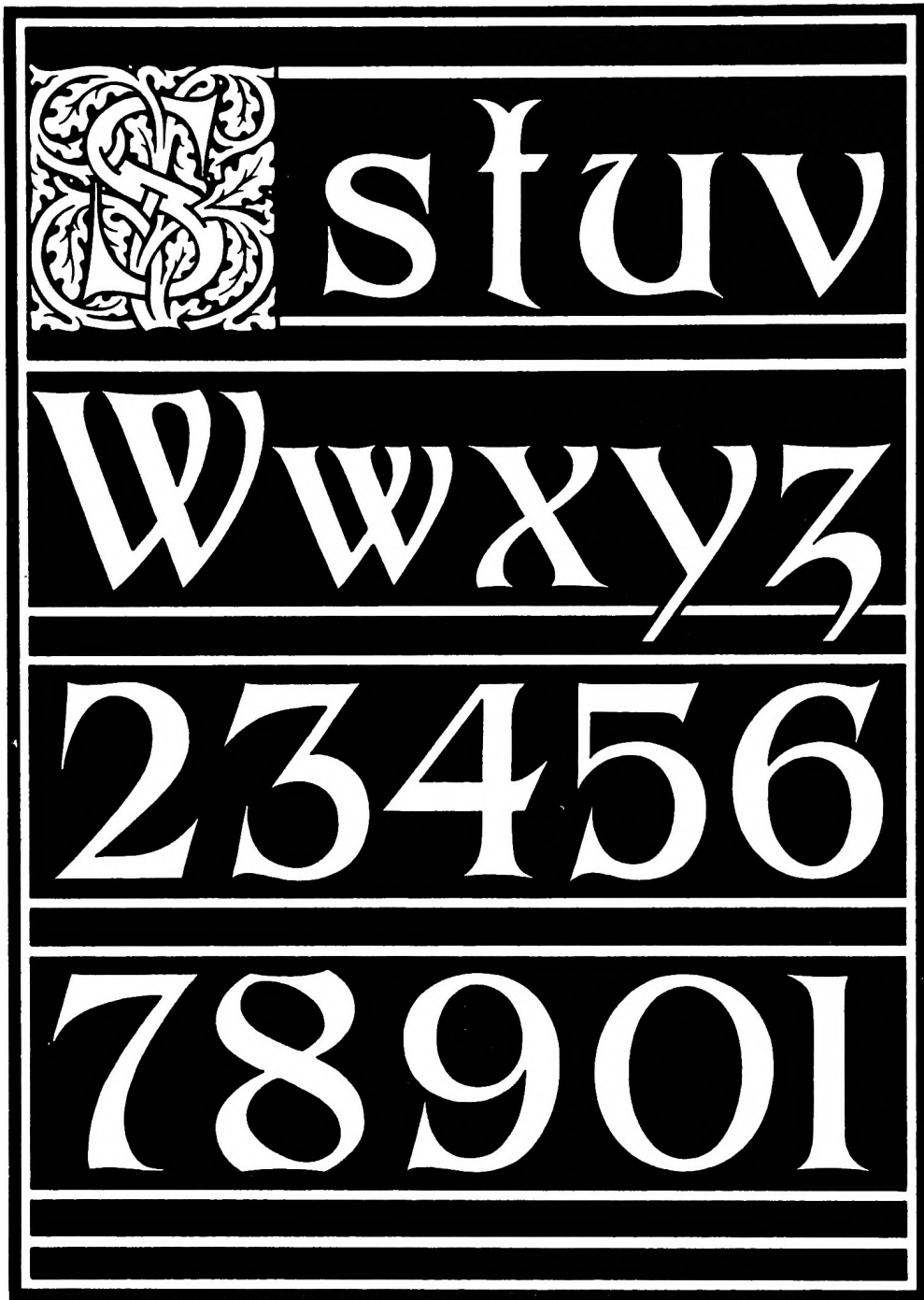


PLATE XIV





A B C D I

E E F G H

I I J K L

M N O P

PLATE XV



PLATE XVI





A a a b c d

E e f g h i j

K k l m n o

P p p q r s

PLATE XVII



τ t u v w

χ xy z z †

2 3 4 5 6

7 8 9 0 1

PLATE XVIII







PLATE XIX

P Q Q R  
S T U W  
V X Y Z ;  
& Æ Œ

PLATE XX





*Aabcd*

*Eefgggh*

*Ijkkllm*

*Nnopq*

PLATE XXI



*Rrsttu*

*Vvwxyz*

*12345*

*67890*

PLATE XXII







PLATE XXIII

N O P Q  
R R R S  
T U V  
W X Y Z

PLATE XXIV





A a b c d  
E e f g g h i  
J j k k l l m  
N n o p q-

PLATE XXV



R r s s t t

U u v w x

Y y z z e t

È è & Z

PLATE XXVI





Læ Oæ

1 2 3 3 4

5 5 6 6 7

7 8 9 9 0

PLATE XXVII



EDINBURGH  
T. AND A. CONSTABLE  
PRINTERS  
TO  
HIS MAJESTY











