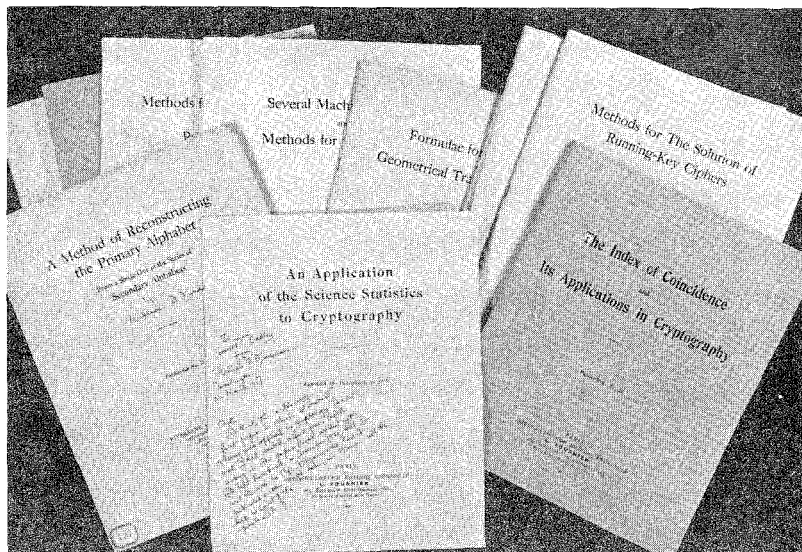


## THE RIVERBANK PUBLICATIONS ON CRYPTOLOGY

Howard T. Oakley



When considering the literature of cryptology no single work conjures up feelings of awe, mystery, and excitement more than - the Riverbank Publications! The very name is the stuff of which cryptographer's dreams are made. The author of most of the publications is none other than William F. Friedman, dean of American cryptologists.

The Riverbank publications first came to my attention in the late 1930's. They were mentioned in the Black Chamber column which appeared in *G-Men Magazine*, a paper-pulp detective story periodical. The Black Chamber, a column devoted to cryptography was written by M. K. Dirigo, a pseudonym for Max Katz who was also a magician of international repute, known as The Great Malini. I never thought I would own a bonafide set of these works, but I did see them in the rare book room of the New York Public Library. I finally managed to obtain a set of photostatic copies from the Library of Congress in 1941. The photostats cost \$55, a sizeable sum in those days. I spent hours cutting and trimming the rough photostats, glueing pages back-to-back with rubber cement, until at last I had reasonable facsimilies of the original Riverbanks - only they were black! I cherished them none the less. It was not until 1957 that I was to get the real set described herein.

Physically, the monographs published in the United States are 8 3/4 x 11 1/4 inches. Both the printing and the paper are of the highest

quality. They are soft-bound with white cover stock. The brochures printed in France have gray cover stock and the paper is of poorer quality. The size of the French printings is somewhat smaller than the American printings, namely, 8 5/8 x 10 5/8 - 10 3/4 inches. The Appendix to publication No. 22 has no cover in either the English or the French versions.

Four exhibits make up the bulk of this article. Exhibit 1 is a memorandum used by the International Book Service to advertise the sale of a set of the Riverbank Publications in the 1950's. The author of the memorandum was almost certainly William F. Friedman.\* Note in passing that there were coauthors for publication No. 19 - Lenox R. Lohr and for publication No. 21 - Elizebeth S. Friedman. This is not mentioned in Exhibit 1.

A complete listing of the Riverbank Publications on cryptology, comprising 17 items, is given as Exhibit 2. The source for the list was also the International Book Service. The list does not include a version of publication No. 22 which has Mr. Friedman's name printed on the front cover and of which only 3 copies are known to exist. This edition presumably had the English text as printed in France with a cover specially printed by Colonel Fabyan for Mr. Friedman alone.

An excellent summary of the cryptographic aspects of each of the publications is given on pages 374-384 of David Kahn's *The Codebreakers*.

The story of the publication of No. 22 is an interesting one that was perhaps best told by Friedman himself in a letter to the author. This is shown in Exhibit 3.

Exhibit 4 should interest everyone. It is comprised of inscriptions by Mr. Friedman on the title pages of my set of the Riverbank Publications. They speak volumes about the quality of the man, William Frederick Friedman.

\*Author's Note: This paper was presented to the New York Cipher Society in February, 1978. In the sequel, Dr. David Kahn kindly sent me a copy of a Memorandum Regarding the Riverbank Publications signed by Friedman: 'for the information of my friend, Sidney Kramer' (Kramer is a Washington, D.C., book dealer). The text of the Kramer memorandum is nearly identical to that of Exhibit 1; hence my attribution to Friedman is confirmed. - HTO

Exhibit 1

## MEMORANDUM REGARDING THE RIVERBANK PUBLICATIONS

Until comparatively recently, the fairly extensive literature of cryptography contained very few books, pamphlets, brochures, or technical articles on that subject, produced or printed in America. Aside from an article or two by Edgar Allan Poe, a very brief paper by J. O. Mauborgne in 1914, and a small book by Parker Hitt in 1916 (both of the latter printed by the Leavenworth Press at Army Services School, Fort Leavenworth, Kansas), it was not until after the United States entered World War I (1917) that any brochures in this interesting and important field of knowledge came to be published in this country. Since then, however, a small number of books have appeared; but students and devotees of the science of cryptography, as well as libraries desirous of building up their collections on the subject, have been earnestly seeking to find some of the earlier American items.

From 1917 to 1921, there was published under the imprint of Riverbank Laboratories, Department of Ciphers, Geneva, Illinois, a series of brochures on cryptographic subjects. These brochures, which are commonly referred to in the literature of cryptology as the Riverbank Publications, were never placed on the commercial market by their publisher, the late Colonel George Fabyan, who was owner of the Riverbank Laboratories and whose financial support of the investigations conducted at the laboratories included funds for operating a school of Cryptography and for producing brochures used as texts in instructing students.

The number of copies of each brochure was strictly limited. Since he paid for their production, Colonel Fabyan exercised careful control over their distribution, presenting copies to students and friends as the spirit moved him. It is known that the number of copies printed of each brochure was limited to 200, for the extent of each printing was indicated on the back of the title page; and when this indication appeared, each copy bore a register number beneath it. There were but three exceptions to the foregoing: in the case (Pub. No. 16), the edition consisted of 400 copies; in the other two cases (Nos. 15 and 22), there is no indication as to the number of copies printed, but there are good reasons for believing that it was also 200 in each case.

When the first brochure was published, it was given a series number, being designated on the cover as "Publication No. 15." It is known that it was the intent of Colonel Fabyan to reserve the numbers 1 to 14, inclusive, for publications on another subject. The brochures on strictly cryptographic subjects bore the numbers from 15 to 22, inclusive; had their author, William F. Friedman, continued employment with the Riverbank Laboratories as Director of the Department of Ciphers, there would no doubt have been additional publications in this field. Beyond the numbers 22, however, there are two more brochures, No. 50 and No. 75, on subjects indirectly related to pure cryptography, written by another author, H. O. Nolan. These also had editions of 200.

For many years students and collectors in this country and abroad have eagerly sought copies of these brochures. It is known that long before his death in 1934, dealers frequently and urgently appealed to Colonel Fabyan to meet their frequent demands for copies, and since that year they have frequently endeavored to obtain copies from the author. However, Colonel Fabyan never acceded to any of these appeals, and the author had no copies to distribute, either gratis or for a consideration, since Colonel Fabyan withheld copies even from the author, save for an extremely limited number, in one case the author receiving but two copies.

It is not known how many copies were given away by Colonel Fabyan before his death; nor is it known, with minor exceptions, who or what private or public libraries possess copies. In or about 1928, Mr. Friedman presented a complete set to the Library of Congress; and the Mendelsohn Collection at the University of Pennsylvania has one copy of certain of the Riverbank Publications. So far as the author or anybody else knows, no libraries other than these possess copies, certainly not complete sets, for some of the brochures are so scarce today as to fall in the realm of rarities.

With possibly one exception, all these brochures were copyrighted by Colonel Fabyan, in his name, although he never made any claim to their authorship. Authorship is not printed or indicated in any way on either the cover or title page. Nevertheless, indisputable proof of authorship of each brochure exists and has been accepted by the Library of Congress, as evidence by accession cards pertaining to these items.

Exhibit 2RIVERBANK PUBLICATIONS ON CRYPTOGRAPHY

- Pub. No. 15 Method of reconstructing the primary alphabet.
- Pub. No. 16 Methods for the solution of running key ciphers.
- Pub. No. 17 An introduction to methods for the solution of ciphers.
- Pub. No. 18 Synoptic tables for the solution of ciphers.
- Pub. No. 19 Formulae for the solution of geometrical transposition ciphers.
- Pub. No. 20A\* Several machine ciphers and methods for their solution. First edition.
- Pub. No. 20B\* Same as No. 20A. Second edition.
- Pub. No. 20C\* Synoptic tables for the star cipher (same as tables at the end of items 20A and 20B).
- Pub. No. 21 Methods for the reconstruction of primary alphabets.
- Pub. No. 22A\* The index of coincidence and its application to cryptography. English cover and title.
- Pub. No. 22B\* Appendix to preceding item, entitled "An application of the science of statistics to cryptography." English cover and title page.
- Pub. No. 22C\* Same as No. 22A in French.
- Pub. No. 22D\* Same as No. 22B in French.
- Pub. No. 22E\* Appendix to No. 22A in French.
- Pub. No. 22F\* Decryptement du systeme cryptographique de Commandant Schneider. (This forms part II of Pub. No. 22C. Printed separately.)
- Pub. No. 50 Production and detection of messages in concealed writings and images.
- Pub. No. 75 Memorization methods specifically illustrated in respect to their applicability to codes.

\*[Letters added by Friedman, not original designations.]

Exhibit 3

EXCERPT FROM LETTER FROM WILLIAM F. FRIEDMAN TO HOWARD T. OAKLEY  
DATED 7 MAY 1957

The story of the imprint dates on No. 22 is an interesting one. I wrote the paper (in English, of course) in 1920; I left Riverbank before it was printed. Col. Fabyan, without telling me, sent my paper to

Gen. Cartier<sup>\*</sup>, who apparently recognized its importance and had it translated without delay. Whether he made a deal with Fabyan I don't know - but the French version was printed late in 1921; and then Cartier had the English original printed by the same printer - but early in 1922. Col. Fabyan kept his own counsel and I knew nothing about the printing of my paper for months - many. When I found out I wrote him, asking for some copies. He sent me two; these had my name printed on the cover, as author. I wrote him asking for more copies, but he never acceded. He must have realized that I suspected what he'd done - had a very few (I don't yet know how many!) copies specially made for my particular benefit. One of the reasons for disagreement with him was his failure to allow authorship credit be shown on the title page of our papers. After the Colonel's death and the death of Mrs. Fabyan I acquired what remained of some of the papers. Among them was one which I designated No. 22B - but I have no more, or maybe I can't find them. They were in English but the title page and cover were printed in Chicago - and these bear the date 1921, I think.

\*[Head of the cipher section of the French ministry of war during World War I and for a while thereafter.]

#### Exhibit 4

#### INSCRIPTIONS ON THE TITLE PAGES OF RIVERBANK PUBLICATIONS BY THE AUTHOR, WILLIAM F. FRIEDMAN

- Note: All start with the salutation: "Greetings to Howard T. Oakley" and are signed by Mr. Friedman.
- No. 15      This rarity - with my autograph of almost 40 years ago. As you see this copy came from my own collection. (This was the first paper I ever wrote on the subject of cryptology - WFF).
- No. 16      Please chalk up against me, and attribute to my youthful zest, the "cheekiness" of the "letter of transmittal" you will see on the page following this sheet. - W.F.F.
- No. 18      Even at this date I feel that the *Synoptic Tables* herein represented a *good* piece of work, and quite *original*; but, the *bibliography* - well I'd just as soon forget that part of this brochure! W.F.F.

- No. 20 I regard this as one of the best if not the best of my early writings in the field of cryptology. The solution of the Wheatstone Cipher was historically quite important. - W.F.F.
- No. 21 It may interest you to know that there is only one other copy which bears the autographs of both authors. - W.F.F.
- No. 22A This brochure is of special importance in the bibliography of cryptology because it represents the very first paper on the subject of coincidences - and it gave a *name* to the phenomenon which has become of such importance in the field. W.F.F.
- No. 22B I think this is the very first paper in which statistical theory was applied in cryptology. I now wish I had waited a few years before writing it. The paper was written *after* I left Riverbank in December, 1920, but I sent the mss. to Col. Fabyan who had it published as can be seen, in France - with the help no doubt of the French G-2.
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