

French encrypted newspaper advertisements in the 19th century

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Abstract

We present a ciphertext database created by one of the authors. It contains over 3700 encrypted newspaper advertisements published in the French newspaper *Le Figaro* between 1875 and 1897. The collection includes over 2300 solved messages, which have been encrypted in almost 90 different crypto systems, as well as over 1400 unsolved cryptograms. We introduce some of the most interesting solved and unsolved advertisements, including messages based on ciphers, codes, and steganography. It will become clear that in addition to the messages contained in the database so far, thousands more encrypted advertisements from French newspapers remain to be catalogued and deciphered.

1 Introduction

Encrypted advertisements in British newspapers have been covered in several publications. Already in 1881, the book *The Agony Column in The Times, 1800-1870* by Alice Clay listed over 200 encrypted and some thousand unencrypted advertisements (Clay 1881). 125 years later, a different book with a similar title, *The Agony Column Codes & Ciphers* (Palmer 2005) was published by Tony Gaffney, using the pen name Jean Palmer. This work had a focus on encrypted advertisements, such as the story of English polar explorer Richard Collinson, who used encrypted advertisements in the London-based newspaper *The Times* to receive messages from his family during a five-year worldwide journey. Collinson's story is also covered in (Rabson 1992) and (Gutoskey 2022). The book *Codebreaking: A Practical Guide* by two of the authors of this paper covers a number of

encrypted ads in British newspapers, too (Dunin 2023).

Contrary to British encrypted newspaper advertisements, French ads of this kind have never received much coverage in the literature. In his classic work *The Codebreakers*, David Kahn reports about the French cryptologist Étienne Bazeries (1846-1931), who discovered his interest in encryption technology through enciphered newspaper advertisements (Kahn 1996). However, Kahn provides no information about the advertisements themselves. Hervé Lehning introduces several French encrypted newspaper ads in a short article titled “Les messages chiffrés du Figaro en 1890” (Lehning 2018), but his collection is small. We are not aware of a comprehensive publication about French encrypted newspaper advertisements.

To shed more light on this subject, one of the authors of this work (Didier Müller) in 2022 started to systematically scan the French newspaper *Le Figaro* in order to find encrypted advertisements. Didier has authored a well-known French crypto-book (Müller 2018) and is a leading French crypto history expert. As he found out, *Le Figaro* launched a new column, *La Petite Correspondance* (Small Correspondence), in its Sunday supplement on January 3, 1875. This column was dedicated to messages exchanged between private individuals. At a time when the telephone was still in its infancy, many readers of the daily newspapers took advantage of this means of communication. Some of the advertisements in this column were encrypted.

A rapid success, *La Petite Correspondance* was also published in *Le Figaro* on Thursdays, starting in May 1875, before finally becoming a

January 3, 1875

PETITES ANNONCES DU FIGARO

La ligne composée de 34 lettres, 1 fr. 50. — La double ligne dans la Petite Correspondance, 70 lettres : 3 francs.
S'adresser de neuf heures à six heures aux bureaux du Figaro.

ON PAIE LES ANNONCES COMPTANT

Les Petites annonces sont reçues jusqu'au vendredi soir, six heures, pour dernier délai.

August 17, 1879

PETITE CORRESPONDANCE

PIERRETTE.— 1° Le prix de la Petite Correspondance est de 6 fr. la ligne de 40 lettres ; 2° on peut envoyer timbres-poste avec l'annonce ; 3° toute copie reçue la veille est insérée le lendemain.
(Administration.)

Figure 1. At the beginning in 1875, an advertisement in the *Petite Correspondance* cost 1.50 francs (which would be around €15 or \$16 today) per line. In 1879 the price was increased to 6 francs.

daily feature. Its title changed to *Renseignements* (Information), then *Arrivées – Départs – Renseignements* (Arrivals – Departures – Information) on July 15, 1878, before being revived on February 25, 1879. It was later renamed *Correspondances personnelles* (Personal correspondence, May 6, 1884), then *Correspondances particulières* (Special correspondence, April 12, 1886), then *Correspondances personnelles* again (July 2, 1886).

At the beginning, an advertisement in the *Petite Correspondance* cost 1.50 francs per line with a line consisting of 34 letters (Figure 1). According to the website historicalstatistics.org, this would be around 15 Euros (16 US-Dollars) today in 2024, based on the gold price. In 1879, an advertisement became much more expensive, at a price of 6 francs for a line with 40 letters. This rate didn't change until at least 1896.

successors, Didier found many encrypted advertisements. He set up a database with his findings, which he made available online at www.apprendre-en-ligne.net/crypto/Figaro (see Figure 2). As of April 2024, Didier's collection contains 3743 cipher messages, 2314 (62 %) of which have been broken by himself or Julien Cavillon, Maximilian Bärtl, Mark van de Beek, or Pierre-Yves Chansigaud.

So far, Didier has scanned the content of *La Petite Correspondance* and its successor columns through 1896, which means that his research project is still ongoing. Nevertheless, he has collected enough material for this first publication.

2 The ciphers used

Here are some facts about the nearly two thousand deciphered advertisements in Didier's database:

In the *Petite Correspondance* column and its

Jeudi 1.7.1880

3 et 9. Q. déception ! F.guenu uf f. jnæg ! Pzf.dqulg.

3 et 9 - Q[uelle] déception ! T[oi] seule et t[oi] plus ! J[']at[tends] viens.
(dm)

chiffré	a	b	c	d	e	f	g	h	i	j	k	l	m	3	n	o	p	q	r	s	t	u	v	x	y	z
clair	z	y	x	v	u	t	s	r	q	p	o	n	m	l	k	j	i	h	g	f	e	d	c	b	a	

Vendredi 2.7.1880

865dn5j...2087.205j21dn53213 7,2,6j2n07 dnDJA !



Lundi 5.7.1880

L. R. G. — V4ch67ch67061176p831676314516.



Jeudi 22.7.1880

3 et 9. Vite fzdkqh ! Fe ug xr. pkeh jn. lux. z mz dqu.

3 et 9 - Vite t[']avoir ! Tu es ch[aque] jour pl[us] néc[essaire] à ma vie.
(dm)

chiffré	a	b	c	d	e	f	g	h	i	j	k	l	m	3	n	o	p	q	r	s	t	u	v	x	y	z
clair	z	y	x	v	u	t	s	r	q	p	o	n	m	l	k	j	i	h	g	f	e	d	c	b	a	

Jeudi 22.7.1880

FILS.— Reçu cher télé. Mbgcsf ! Ser. gare avec lett.



Figure 2. This excerpt from Didier's database shows five encrypted newspaper advertisements from *Le Figaro* published in July 1880. Two of these, which used simple substitution, have been solved. The other three remain unsolved.

So far, 86 different encryption systems have been identified.

- Most encryption systems used are simple substitutions. The Caesar cipher is very common (938 appearances), with the letter “w” (570 out of 938), which is very rare in the French language, sometimes being omitted (368 out of 938). The most frequent key (offset) used for the Caesar cipher is 1 (511 out of 938). This means that over 13% of the ciphertxts Didier found in *Le Figaro* are based on one of the simplest ciphers. Why do so many encryption systems remove the letter “w”? At the end of the 19th century, “w” was not really considered a letter in French. It wasn't until 1964 that the Robert dictionary first declared “w” to be the 23rd letter of the French alphabet.
- Another very frequent system is the Atbash cipher (175 appearances). The Atbash cipher is a substitution code that maps the letters A to Z to the letters Z to A.
- Other types of simple substitutions appear 72 times. Many of these ciphers are based on an alphabet that includes numbers. In some cases, numbers replace vowels, while the rest stays in the clear.
- There are a few polyalphabetic ciphers in the collection (215 appearances). The

most sophisticated one is the one that can be referred to as TRn. It uses three shifts of the Caesar cipher and nulls, which indicate that the words that follow are written backwards.

Didier has encountered only a few homophonic ciphers (6 appearances). Usually, the letter “e” has several homophones, which means that it can be replaced by several symbols.

- There are also only a few transposition ciphers (53 appearances) in the database. Most of these consist of writing from right to left.
- So far, Didier has only been able to identify and decipher one code based on a codebook, namely *Benoît Brunswik's Dictionnaire pour la correspondance télégraphique secrète* (Dictionary for secret telegraph correspondence), which was used 76 times (Brunswik 1869). Considering that codebooks were very popular in the 19th century, it seems likely that others were used as well (one candidate is provided below).
- There are also more original ciphers, including combinations of encrypted and plain language, mixed alphabets, and the use of null characters to confuse a potential solver.

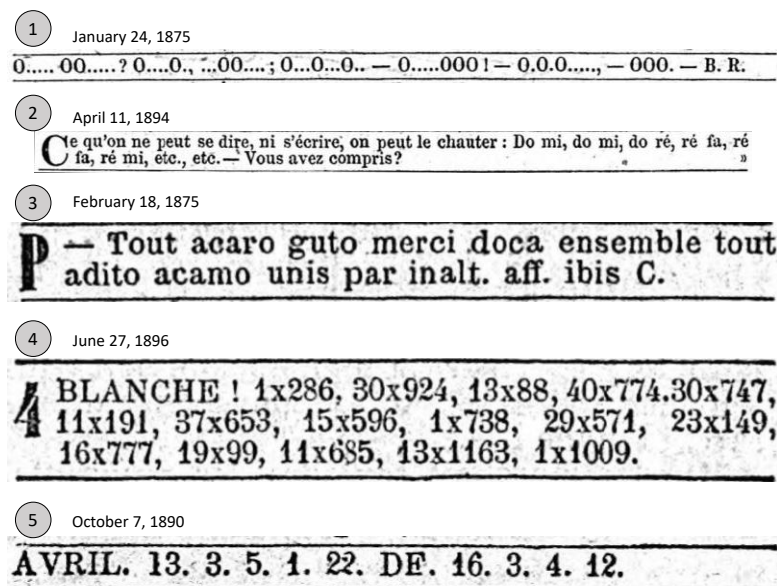


Figure 3. There are over 1300 unsolved messages in the collection. Five of them are listed here. Many of the ads are short and therefore provide only little material for analysis.

Although many of the encryption systems used in *Le Figaro* are fairly simple to solve, there are a few difficulties that a cryptanalyst might encounter:

- Most advertisements were certainly written by amateurs. As a result, there are numerous errors, including misspellings and incorrectly shifting some letters.
- To save money, many words were abbreviated. Sometimes, the abbreviation is so short that it is hard to reconstruct the original word.
- There are also typographical errors: “c”s that are “e”s, “h”s that are “b”s, and so on.

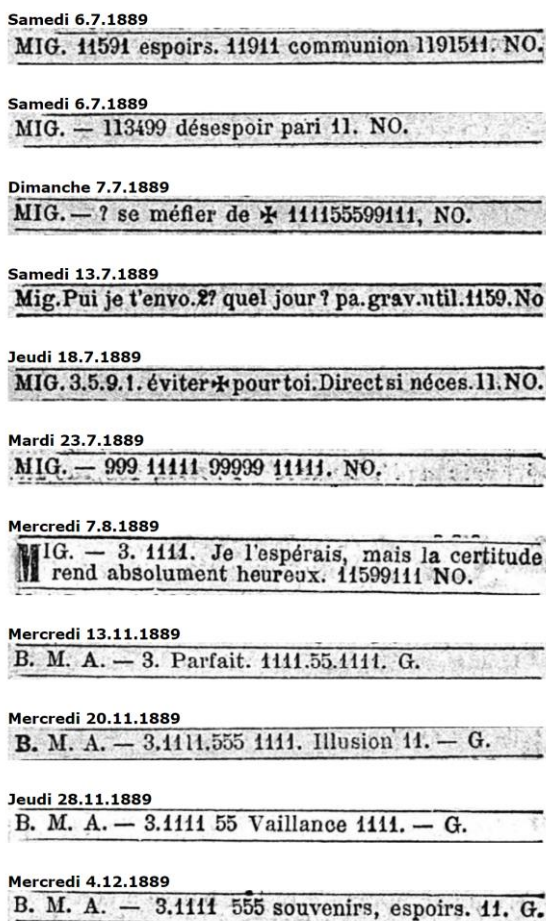


Figure 4. At least 147 ads start with the letters MIG or B. M. A. As can be seen, many of these messages contain digit groups such as 1111, 555, or 9999. The meaning of these ads is unknown.

3 Content of the ads

The vast majority of the deciphered advertisements in Didier’s database represent messages that were exchanged between lovers. A few others are about the health conditions of the sender. Messages with a commercial background are very rare. To our regret, we haven’t encountered any outstanding background stories so far. We still hope to find something that is as spectacular as the aforementioned story of the English polar explorer Richard Collinson, who in the 1850s established a worldwide communication system based on encrypted ads in *The Times*.

Most of the ads were apparently written by men for women, because in those days women stayed at home and it was dangerous for them to receive mail from lovers. The women, on the other hand, probably replied with letters. As they weren’t financially independent, they often couldn’t afford to pay the price of an advertisement. For this reason, we usually have only half of the dialogue.

4 A selection of unsolved messages

As mentioned, many of the encrypted advertisements in Didier’s collection are still unsolved. Figure 3 shows a few examples, which are covered in more detail below.

4.1 A binary message

The message in Figure 3.1 mainly consists of words encoded with the characters “0” and “.”. This suggests that a binary code was used, similar to the Bacon cipher, the Morse alphabet or the ASCII code (which was only invented in the 1960s). So far, we have not been able to make sense of this message.

4.2 A musical message?

The advertisement in Figure 3.2 is in French plaintext, and can be translated to English as follows:

What can be neither said nor written can be sung: Do mi, do mi, do re, re fa, re fa, re mi. Do you understand?

The terms “do”, “re”, “mi” and “fa” probably correspond to the musical notes c, d, e and f. Unfortunately, no note lengths are given. A possible explanation is that the notes in question form the beginning of a piece of music. The notes actually sound like a melody, which is, as we know, not always the case with a message disguised as sheet music. However, we are not aware of any tune that starts this way. Another suggestion is that the notes represent the beginning of a musical choir warm-up, so may refer to such an event.

Another potential explanation is that the Solresol artificial language was used. Solresol is

October 28, 1880

L. S. Espère qu'as reçu mes plis impor., mon télég.
L. et m. chif. 01011. 58597. 01614. 36958. 79469.
51558. 311254111333. 26141. 12676.

October 31, 1880

L. S.— 41011. 36177. 57378. 01012. 46645. 75280. 63053.
L. 85353. 28613. 123554. 53498. 66542. 89323.

November 2, 1880

L. S.— 07623. 14866. 82742. 03042. 01011. 58597. 01614.
L. 311224. 01113. 51341343345411. 1441. 78337. 07825.
75180. 01911. 62645. 01011. 3112143324355441. 75879.
12676. 5354. 03042. 01011. 31123545341415. 43842.
75879. 11580.

November 4, 1880

L. S.— Nom de 74368 que voyez souv. nommé est ce-
L. lui de 65421. Signal. de 27314 reçu 73768. a dû
01314. Pas 2 3 733. ni 23143. 131252111315221333. pas
34078. 28825. 08252. 36289. pas pré 13513413515421.
83324. 92850. un peu 85845. assez 54679. pour être
08013. Humeur 93579. 86825 cachée. Physion. gén.
bonne. pas 64442. ven 133313. déjà 95580. a dû 46431.

November 8, 1880

L. S.— Il n'av. pas dit Vu, j'av. dit voir 54098. c'et. avis
L. a. 01114. p. ma 64331. 65421. ignore autres. 56290.
95768. 82742. mon 51558. 79469. ne 38958. pas. T. est
26613. 76169. 02632. de 36958. 71467. 27935. 01114. Ce q.
me 43377. c'est q. les. 37599. du 86225. ne 01111. 23132
pas. oui 01711. 06721. 123554. 01011. 38858. voilà com.
Me rens. et 01113. qui 11299. la lett. 46714. p. 01111.
faire. 97968. 5314. ai b. 97776.

November 9, 1880

L. S.— Dimanche. Chaque fois que je 11599. 85144.
L. avec 12187. 94470. il y aura lettres 27011. dep. la
76188. 59460. 11599. le 1^{er} 65742. Ne pas tenir en 22452.
ni sur 58958. mais sous 92678. dit 85144. Lu hier
58697. lettre 89353. 88645. 3435 3352. attendre mes
avis, ma 22023. 82742. samedi.

December 23, 1880

L. S.— J'avais dit. 28613. peut-être vous. 77689. donc
L. rien trahi pourquoi mal lire. Dois-je 82742. te dire
en 75598. de ne pas 51489. 51957. ma 68432. et 83923.
22123. 95170. de 36958. 92350. aprésent 03042. 02643.
03042. 78969. 36958. 79469. 41011. 01113.

December 25, 1880

L. S. Vous ne comprites pas que. 93988. à la 94656.
L. des 25723. voulait dire gardez. 63632. 85144. Si
vous jugez que mon 27011. a ainsi disparu sans 78770.
Je mets. 78560. 26141. 12676. de 58697. 68514. 41011.
68943. 07825. 95768. 07623. 54096. 51558.

Figure 5: This message series was probably encrypted with a code based on a codebook.

a music-based artificial language developed by the Frenchman François Sudre starting in 1817 (Wikipedia 2023). The idea behind it is similar to that of the much better-known Esperanto, although the implementation differs considerably.

The vocabulary of Solresol is based on the tonal syllables do, re, mi, fa, sol, la, si (or ti). Frequently used words consist of one, two or three tonal syllables. Thus, si stands for “yes” and do for “no”. Doredo means “time”, dorela “year” and doresi “century”. More specific terms are formed from four or five syllables. One can communicate with Solresol not only by speaking, but also by singing, whistling, or using symbols.

Is “Do mi, do mi, do re, fa re, fa re, fa mi” a Solresol message? We have consulted experts, such as via the Solresol online community on Discord, but to our regret we have only received negative responses.

4.3 A non-existing language

The message in Figure 3.3 appears to be mainly made of French words, which, however, don't form a meaningful sentence. Perhaps, they come from a codebook. It seems also possible that each word stands for a letter or number, though such a system would have led to a costly waste of bandwidth.

4.4 A list of alleged multiplications

Figure 3.4 starts with the word *BLANCHE!* (White) and then shows a list of multiplications:

1×286 , 30×924 , 13×88 , 40×774 , 30×747 ,
 11×191 , 37×653 , 15×596 , 1×738 , 29×571 ,
 23×149 , 16×777 , 19×99 , 11×685 , 13×1163 ,
 1×1009

One possible explanation is that this message was created with a book cipher. If so, “ 30×924 ” might stand for the 30th letter on page 924 or the 924th letter on page 30 or something similar. As determining the 924th letter in a text can be laborious and error-prone, it seems possible that a book mainly displaying tables was used. Or perhaps, an additional cipher was used, which mapped the true position of the letter to a larger number.

On the other hand, it seems possible that the alleged multiplications refer to entries of a codebook, perhaps with some super-encryption. As the message is short and no other message of this kind is known, it might be difficult to find the solution.

4.5 A list of numbers

The message in Figure 3.5 can be transcribed as follows:

AVRIL. 13. 3. 5. 1. 22. DE. 16. 3. 4. 12

As all the numbers are between 1 and 26, it seems likely that they need to be substituted with letters (A=1, B=2, C=3, ...). Such a substitution renders the following result:

APRIL. M. C. E. A. V. DE. P. C. D. L

We don't know what this means.

5 An unsolved ad series

The collection described in this work includes many series of advertisements, which were apparently published by the same person. One of the longest and most interesting ones consists of at least 147 ads, which were published between May 29, 1887 and May 7, 1890. Figure 4 shows a few of these cryptograms. Until August 7, 1889, these messages start with MIG, then with BMA. As can be seen, many of the messages contain digit groups such as 1111, 555, or 9999. To our regret, we have no idea how such a cryptogram can be deciphered.

6 Another unsolved ad series

Figure 5 shows another series of encrypted advertisements from *Le Figaro*. All eight messages were published between October and December 1880. No other ads of this kind appear in Didier's collection. As can be seen, some of the messages contain cleartext passages, some don't. The ciphertext parts mainly consist of five-digit groups, which is typical for a code based on a codebook. The best way to break such an encryption is usually to find the codebook that was used. Anyone interested in solving this mystery should probably start by checking French codebooks that were available in 1880.

7 Steganography used?

Figure 6 shows two advertisements that might represent steganographic messages.

7.1 A LA PETITE CURIEUSE

The title of this message translates to "To the curious little girl". It lists the names of about 30 persons along with their birth years. It finishes with the words "and now draw your conclusions, O tempora, O mores". The latter is a famous Cicero quote, which can be translated as "Oh the times! Oh the customs!"

It seems unlikely that somebody spent the money for a newspaper advertisement just to publish names, birth years, and some trivial statements. We therefore believe that this

A LA PETITE CURIEUSE. — Angustine Brohan est née en 1824; Déjazet en 1797; Em. Guyon en 1822; Nathalie en 1818; Eug. Doche en 1823; Fargueil en 1819; Scriwaneck en 1824; P. Viardot en 1821; Ugalde en 1829; Marie Laurent en 1826; Agar en 1838; Alphonsine en 1831; Arnould-Plessy en 1819; Zulma-Bouffar en 1844; Madeleine Brohan en 1833; Marie Cabel en 1827; Francine Cellier en 1841; Jane Essler en 1836; Favart en 1833; Gueymard-Lauters en 1834; Suzanne Lagier en 1833; Macé-Montrouge en 1836; Miolan-Carvalho en 1827; Céline Montaland en 1843; Christine Nilsson en 1847; Adèle Page en 1825; Adelina Patti en 1843; Blanche Pierson en 1843; Rousseil en 1841; Marie Sass en 1838; Hortense Schneider en 1835. — Et maintenant faites vos calculs. — « O tempora! ô mores! »

TROIS PECHES, une poire, six noix, trente raisins, dix abricots, onze fraises. Une brouette, une baladeuse, un fiacre, une calèche, un camion, une voiture de déménagements et ton cœur. Voilà mon opinion. Si cette fois on y comprend quelque chose, je renonce à t'écrire par la voie de la presse. Volte.

Figure 6. These two messages contain lists of persons and objects. They might represent steganographic messages.

message has a hidden meaning. As with other of the messages, we have no idea about what the true content of this advertisement might be.

7.2 TROIS PECHES

This message translates to:

Three peaches, one pear, six nuts, thirty raisins, ten apricots, eleven strawberries. One wheel-barrow, one lamp, one cab, one carriage, one truck, one van, and your heart. Here is my opinion. If this time you understand something of it, I will stop writing to you via the press. Please.

Again, it is unlikely that somebody would invest a considerable amount of money just to publish a list of fruits and vehicles. We therefore believe that there is a hidden meaning behind these lines, but we don't know any details.

8 Conclusion

Didier's database is a treasure trove for anybody interested in the history of encrypted communication. In this work, we have given an overview on the first 3165 finds and provided a number of examples of solved and unsolved messages from this corpus.

The current collection is still far from complete, as advertisements published in *Le Figaro* after 1896 and in other French newspapers need to be found and reviewed. Nevertheless, our work shows that several thousand encrypted advertisements were published in France in the 19th century. This is considerably more than the thousand ads that are mentioned in the aforementioned book of Tony Gaffney, which covers more newspapers (8) and a longer time span (1804-1909). This comparison suggests that considerably more encrypted advertisements were published in France than in Great Britain at the time.

8.1 Open questions

It is obvious that additional research work is necessary in order to get a good understanding of French encrypted advertisements in the 19th century:

- The collection includes over a thousand unsolved cryptograms. It will be an interesting task to break these.

- It should be checked whether other French newspapers, especially *Le Monde*, contained encrypted advertisements as well.
- So far, Didier has reviewed the content of *La Petite Correspondance* and its successors until 1897. Later issues of *Le Figaro* need to be scanned, as well.
- If it is indeed true that there were more encrypted messages in French newspapers than in British, it would be an interesting question to figure out why.

8.2 Call for help

We want to use this publication to launch a call for help. To further extend the database, Didier would appreciate the help of other crypto enthusiasts. Perhaps, one or more readers are interested. Check here for details: <https://www.apprendre-en-ligne.net/crypto/Figaro/contribuer.html>.

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