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## Envelope Association Through Manufacturing Characteristics

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There are many times an examiner will begin an investigation without a clear-cut idea on how the specific problem at hand will be solved. This was the situation in a case recently submitted to the laboratory of the California Department of Justice.

An undercover agent had purchased illegal narcotics in two #1 coin envelopes. The subject, when arrested, stated that he had only been told to deliver the envelopes and had no idea what was in them. The envelopes had been sealed when delivered to the agent. A search warrant was served at the subject's place of residence. During the search, a box of Benchmark #1 coin envelopes sub-20 500-count was found. There were 244 envelopes in the box.

The agent submitted the two questioned envelopes in which the narcotics had been purchased and the box of 244 envelopes found in the residence. The problem was to determine if the two sets of envelopes were manufactured by the same company. After the case was received for examination, it was decided that instead of attempting to use all 244 envelopes in the box, it would be best to take random samples for any tests that might be conducted. Ten sample envelopes were removed from different locations in the box.

It was still not clear which would be the best way to approach this problem. A battery of tests was conducted to find some significant factor that would bind the questioned and known envelopes together. The overall dimensions of the envelopes were consistent. All the envelopes were 3½ in. (89 mm) long by 2¼ in. (57 mm) wide by 0.009 in. (0.229 mm) thick. The questioned envelopes were submitted to long-wave ultraviolet light. The paper stock reacted with a different intensity than did the gum used to seal the envelopes. This allowed the patterns by which the gum had been applied to the envelopes to be examined. The patterns were quite distinctive in nature and contained many peculiar irregularities. The irregularities consisted of gaps in the gum, areas where the gum had extended beyond the folds, and distinctive patterns and shapes.

The envelopes received by the agent had been folded in half across their widths and the upper flap, left open by the manufacturer, had been sealed to the bottom back of the envelopes. In opening the envelopes the agent cut along the tops, leaving the flaps sealed. These flaps could not be examined.

The ten sample known envelopes were then subjected to long-wave ultraviolet light. As with the questioned envelopes, the paper stock and the gum reacted with different intensity. The gum patterns found on the sample known envelopes were also found to be quite distinctive. The peculiar irregularities and distinctive patterns found on these envelopes matched those found on the two questioned envelopes (Exhibits *A* and *B*, Fig. 1).

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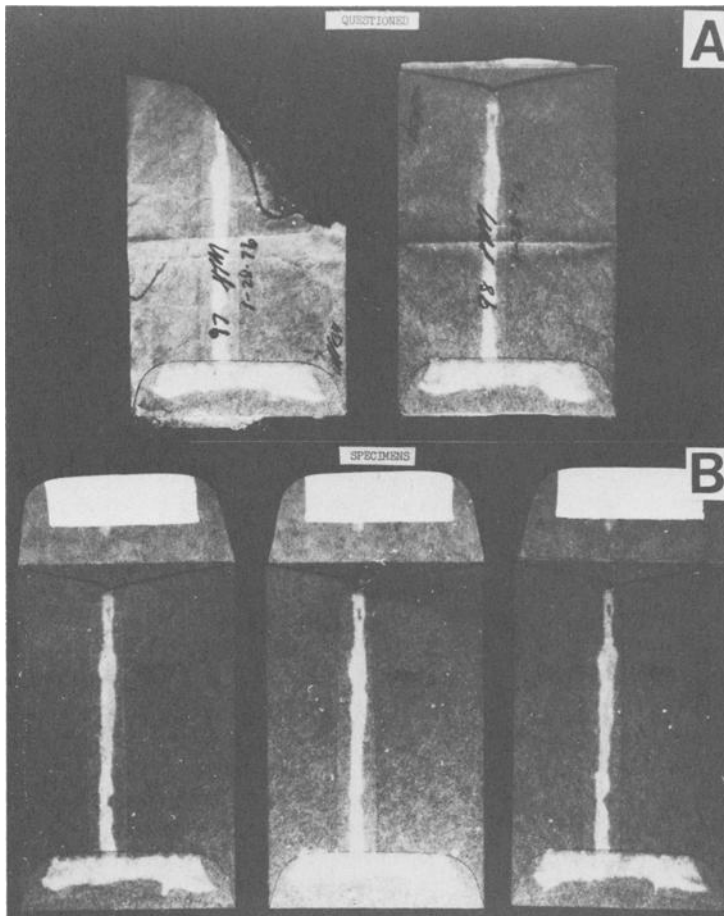


FIG. 1—Comparison of questioned envelopes with known samples.

The next problem was to determine how unusual these patterns were. Were they distinctive enough to place the questioned and known envelopes together?

The first step was to obtain other #1 coin envelopes for test purposes. Gilroy, United States Envelope, and Karolton were the three brands used in this first test. Ten sample envelopes of each brand had been obtained. Overall dimensions were the same with the exception of paper thickness; all of these envelopes were 0.013 in. (0.330 mm) thick. Under long-wave ultraviolet light the paper and gum reacted with different intensities. The gum patterns found on all three brands of envelopes were not even remotely similar to those found on the questioned and known envelopes originally submitted.

Paper distributors in the area indicated that the Benchmark brand was produced by the United States Envelope Co. The factory representative of the company's plant in Emeryville, California stated that the Benchmark brand was produced only at the Emeryville plant, where a machine is set up to run between 100 000 to 200 000 envelopes and then is torn down and reassembled to make a different style of envelope. Periodically parts such as the glue head are replaced.

Thirty-one sample Benchmark #1 coin envelopes were obtained from five random boxes

at the factory. The same set of tests was conducted with these envelopes. Overall dimensions, including the 0.009 in. (0.299 mm) thickness, were the same. When submitted to long-wave ultraviolet light, the gum patterns were found to be different from those found on the submitted questioned and known envelopes.

When the envelopes were viewed under long-wave ultraviolet light, it was noticed that the gum pattern appearing on the top flap, which is not sealed at the factory, was even and consistent, not at all like the gum patterns found on the main seams. The factory representative was again contacted, and he stated that in the manufacturing process the gum is applied to the open top flap and then dried prior to any further steps being taken. This process allows the gum to dry in an even pattern regardless of disparities in thickness to present a cosmetic appearance. The second step in the manufacturing process applies a different type of gum to the main seams and folds the envelope into the desired shape. The envelope is then placed into the packaging box, and the wet gum is allowed to dry naturally. Thus when the main seam flaps are squeezed by compression a pattern is formed according to the amount of gum applied in each area.

During the examination of the known envelopes in the box, a slight variation was observed in the gumming patterns between those envelopes in the front and those in the back of the box. It may have been possible to place a particular envelope somewhere close to its original position in the box. However, since it was not possible to determine what the original position of the envelopes in the box had been nor how many envelopes had been used before the questioned envelopes were removed, this aspect could not be related in court with any great degree of certainty and was omitted from the report. It is mentioned now in the hope that if this problem arises elsewhere steps can be taken to preserve the original order of the envelopes.

The conclusion stated in the report was that the two questioned envelopes were manufactured on the same machine as the sample envelopes taken from the box found in the subject's residence.

In a recent discussion of these findings, Ronald M. Dick, examiner of questioned documents with the U.S. Secret Service Laboratory in Washington, D.C., stated that he and Linton Godown, examiner of questioned documents in private practice, had been corresponding about some recent findings concerning envelopes. Mr. Dick had observed a logo-style imprint "20 EC 5" on the inside presealed flap in the lower right corner of an envelope (Exhibits C and D, Fig. 2). Mr. Godown had also observed a logo-style imprint "EG/6/75" on the upper right back flap of an envelope manufactured by Tenison Envelope Co. Mr. Godown had been informed by a factory representative of the company that the imprint was not common to all their products but was used to identify large users of different types of envelopes. The imprint helped to determine the last purchase date of that particular item. Mr. Godown was informed that the initials "EG" could stand for anything the representative wanted but usually stood for the purchasing company's initials. The date would change with each run of envelopes. This same factory representative stated that the imprint "20 EG 5" that Mr. Dick had observed probably stood for the stock number, the initials of the purchasing company, and the final digit of the year of manufacture.

After this information was received the United States Envelope plant in Emmeryville, California was again contacted. The representative stated that the use of an imprint had been a common practice of United States Envelope in preprinted envelopes. After their particular imprint a "/12" was inserted to indicate production at plant #12 in Emmeryville. However, it was stated that United States Envelope is discontinuing this practice.

At first the purpose of this paper was to deal solely with the aspect of identifying envelopes through gumming patterns. However, the free exchange of information, as was the case in this investigation, is much more important. An examiner may be involved with

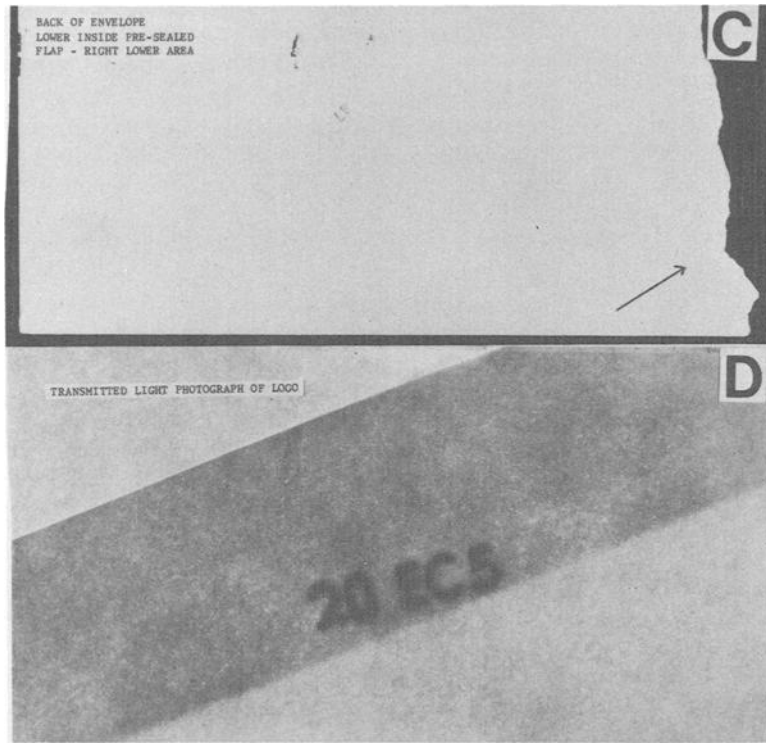


FIG. 2—The area noted with an arrow in C is enlarged in D to show manufacturer's imprint.

only the small portion of information that pertains to his immediate problem. Yet when many small facts are brought together, a much clearer overall picture is obtained. By this process both individuals and the profession are enriched.

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