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POLICE SCIENCE

IDENTIFICATION OF PARKING AND TURN SIGNAL LENSES

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The criminalistics laboratory occasionally is confronted with the challenging problem of identifying the car make, model, and year source of broken parts left at hit and run accident scenes. One of the common types of broken parts in the past has been headlamp glass. The advent of the standard sealed beam unit, however, decreased the value of this kind of physical evidence because of lens interchangeability and the absence of pattern character which would be useful for identification of the car source. Shortly after the end of World War II the automobile manufacturers began to place on their products safety devices functioning as parking and turn signal lenses, which in the experience of the authors are likely to be found at hit and run accident scenes.

To date, this potentially valuable kind of evidence has received no serious attention in the criminalistics literature. This paper is an attempt to overcome this deficiency through the presentation of an identification scheme for front parking and turn signal lenses found on American made cars for the past ten years.

In the beginning the intent of the authors was only to gather a collection for use as comparison standards. As the collection neared completion it became apparent that this particular type of automobile part offered many advantages for identification over the headlamp lenses commonly discussed in the literature. Among the advantages which could be seen by studying the entire collection these were outstanding:

1. The lenses, usually plastic, are manufactured from precision dies, thus insuring accurate reproducibility of identification features.

2. There was represented an abundance of class features useful for systematic elimination.

3. The lenses found on cars made by the same manufacturer had clear year to year differences in the greater number of cases.

4. The lenses are not interchangeable among automobiles of different manufacture.

5. The shape of the majority of lenses, their location on the car, and the fragileness of the plastic (or glass) all contribute to the chances that this type of automobile part can be broken by forceful impact.

Anyone experienced in the practice of criminalistics is familiar with problems of identification in which he must develop maximum information from sample sizes which are distressingly small, or not entirely representative of the original source. It is well recognized that despite such difficulties some amount of information can be developed, and, while being admittedly limited, is useful. With such thoughts as guides, several specifications for an ideal scheme of identification were drawn up. It is believed that all have been met, and can be set forth as follows:

1. The study should be complete within the specified scope thus assuring a 100% check.

2. The sample size required for useful identification should be held to a minimum.

3. The worker should not be restricted to a

step by step procedure; if certain features of a lens are missing it should be possible to effect an identification, or, at least, narrow down the possibilities to a very small number.

4. The class features chosen should be clearly recognizable or determinable.

5. The variation of features within a single lens should be taken into consideration.

INTRODUCTION TO SCHEME

Scope of Study. The lenses included in the study are those for use as front parking and turn signal lenses on American made passenger cars for 1950 through 1959. Parts serving the double purpose of foglamp and signal lens were found on a small number of cars. These were included, while parts designated for use as foglamps only were not. No distinction was made between right hand and left hand lenses in those cases where one is the mirror image of the other. The total number of lenses studied was 182.

Each lens in its entirety was considered during the gathering of data as presented on Chart I. However, in gathering the data for Charts IIA and IIB a decision was made to consider only the lens face proper, while excluding the rims and sides. It was reasoned that inclusion of the latter would unnecessarily complicate the scheme, since, as a practical matter, when these are present it is highly probable that parts from the face will be also available.

Lens Sources. The lenses studied were obtained directly from each of the major manufacturers of American made cars. Data identifying each lens was supplied by all, but in some instances, where incomplete or in question, was amplified or verified through local sources. Information relating to the meanings, reproducibility, and authenticity of certain embossed data was developed or confirmed through local parts dealers.

Sample Size Required. The amount of sample required for successful identification through Part I of the scheme assumes a position of secondary importance as compared with the necessity of obtaining fragments bearing specific groupings of letters or numbers. Since most of these are to be found along a lower or upper edge it can be expected that they will be retained with the car by the mounting element.

The important factor limiting useful employment of Part II of the scheme is sample size. All

data represented can be determined from fragments having the approximate size of a 25¢ piece.

Equipment. The equipment necessary for the successful use of the scheme is undoubtedly to be found in even the most rudimentary laboratory. A Geneva lens measure is the only specialized piece required. A description of this instrument and instructions for its use is to be found in the listed reference.¹ In addition, a pair of dividers and an accurate 6 inch scale (Lufkin or equivalent) are necessary. A simple hand lens, or low power stereoscopic microscope when available, will be found to be of convenience with certain lenses. While not being absolute requirements, two further suggestions can be made:

1. The purchase of selected lenses from local parts dealers representing both basic class features and unusual departures from such features. These are suggested: Lenses numbered—19, 23, 24, 37, 44, 46, 90, 93, 102, 151.

2. The preparation of a card index by transfer of the data presented on each of the three charts. This enables a simplified, rapid, and systematic search for the lens or lenses which fit the descriptive features represented in the questioned fragment.

Cautionary Considerations. The effective use of any identification scheme requires an understanding of the basic principles of identification. Many of these principles are inherent or at least implied in the method presented. For purposes of emphasis a number of cautionary notes are given:

1. Ultimate identification should be reserved until confirmation is had through direct comparisons against authentic samples obtained from local parts dealers.

2. Only the actual presence of a given feature is of eliminative value unless the amount of sample on hand is sufficient to justify a belief that it is entirely representative.

3. Some identification features are determined by instrumental measurement. Lenses can be eliminated only if they fall clearly outside the range of values established from the questioned fragment. Consideration should be given to limits of accuracy as specified under each type of measurement.

4. The worker should make every effort to gain an understanding of all class characters

¹ O'Hara, C. E. and Osterburg, J. W., *An Introduction of Criminalistics*, pages 58-60, Macmillan New York, 1959.

before applying the scheme in actual practice. This can be accomplished more readily if the samples mentioned previously are at hand for familiarization.

Method of Presenting Data. The manner of presenting the data found in Chart I requires no special explanation. The method of presenting data as found on Charts IIA and IIB takes into consideration the likelihood that a considerable portion of the lens can be missing. The seven class features selected are arranged so that they proceed from clearly recognizable, which are present regardless of location on the lens, to characters less recognizable but determinable and possibly variable in a single lens. This kind of presentation is not restrictive in the sense of step by step identification keys, but rather, enables the worker to take advantage of such features as are available, limited as they may be, to gain the maximum amount of information towards the identification of the particular lens source.

Makeup of Scheme. The overall identification scheme is divided into two parts:

Part I consists of a tabulation of data determined from embossed numbers and letter combinations. When present in their entirety, these are useful for the specific identification of the lens source. The data is presented through Chart I which is accompanied by short discussion.

Part II is for use when the available sample size is small and does not include (or only partially includes) embossed markings as tabulated under Part I. It is here that the greater part of the study is represented. The method of presentation has been chosen to give the worker the flexibility necessary to account for the variations of available features likely to be encountered in practice. It seeks to characterize in tabular form each of the lenses on the basis of the presence or absence of seven class features. The method of presentation is by way of two charts (Charts IIA and IIB) accompanied by a detailed discussion of each chosen class feature.

SPECIFIC DETAIL. PART I OF SCHEME

On Chart I there is tabulated in column form data pertaining to embossed letters or numbers for each lens by make, model, and year. A description of the column content under each main heading follows.

Assigned Lens Number. This column identifies

each lens by an assigned number, which for the sake of brevity is carried over and entered into Charts IIA and IIB. Cognizance should be taken that a given lens can be specified as original equipment on several year-model cars.

Part Number. When present on a lens it usually consists of a series of 6 or 7 numbers, and is to be found along the inner edge of the rim. Whether or not it was the manufacturer's practice to place such numbers on a lens is indicated by the presence or absence of parentheses. Parentheses used to enclose the numbers indicate that the manufacturer's part number appears on the lens. If parentheses are not used no part number will be found.

Cars on which the left and right hand signal lenses are mirror images of each other sometimes bear different part numbers. In such cases only the lens for right hand use has been entered into the chart. No confusion should arise on this account because the numbers differ (if at all) only by one in the last digit. In addition, these are usually accompanied by the designations RH (right hand) and LH (left hand).

It is clear that if a part number is found on a lens fragment its value is great towards a specific identification of the lens source.

Other Numbers. These consist of 3 to 5 numbers sometimes in combination with letters, and are to be found at the same location as part numbers. They are usually lens manufacturer's designations and can possibly differ for the same lens, especially if a replacement is involved, since the data presented are those determined from lenses used as original equipment on production model cars.

Letters. These ordinarily consist of 3 to 6 letters to be found on the outer lens face. When present they form the basis for a specific identification. Here is also found the indication of handedness (RH, LH, etc.). When designation RH only appears in this column, LH is to be found on opposite lens.

Supplementary Data. Certain automobile manufacturers and lens makers symbols occur repeatedly, particularly among lenses used by a major manufacturer. While these have little value for specific identification they are useful for elimination purposes. The data under this column heading is presented in the form of numbers which are related to particular symbols, words, or word groupings through an illustrated key. See Key to Chart I. Isolated numbers or letters not recurring so as to identify a given maker were disregarded.

KEY TO CHART I

SUPPLEMENTARY IDENTIFYING DATA COLUMN

1. AL	10. I.G.C.	20. MADE IN ENGLAND LUCAS (FOLLOWED BY NUMBER GROUPING)
2. BB	11. S	21. A.G.A.
3. EMPCO	12. SM	22. L.L. CO. (FOLLOWED BY NUMBER SERIES)
4. Tomaco	13. D	23. TOP
5. GUIDE	14. 4	24. S.G. CO.
6. MFD. BY STIMSONITE (ASSOCIATED WITH NUMBERS)	15. V	25. M
7. GERITY	16. EX	26. MIO
8. PACK GERITY	17. 3	27. P-4
9. D.M.	18. HL	28. P-13
	19. III	

SPECIFIC DETAIL. PART II OF SCHEME

This portion of the overall scheme divides the total number of lenses studied into two groups. The division is based on the presence of molded designs on the inner surface only, or on both. If the lens fragment is seen to bear moldings on the inner surface only, the worker will use Chart IIA in his search to find the lens (or lenses), the tabulated class features of which best correspond to those determined from the questioned fragment. In the event that moldings are present on both surfaces use is made of Chart IIB.

The division is necessary because of the impracticability of determining lens shape (N/D expression) on lenses having moldings on both inner and outer faces, a feature having great identification value with those lenses having moldings only on the inner surface. In addition, the character of outer surface moldings were usually different from those to be found on the inner surface.

Having determined which of the charts is to be used, the worker can proceed with the further characterization and possible identification of the questioned fragment through the use of the class features which follow.

Type of Material. Only two types of material can be involved: glass or plastic.

Striations. An uncommon feature consisting of V shaped grooves, usually minute and closely spaced, arranged as a series of parallel lines normal to and within a zone of curvature. See Figures 15 and 16.

Molded Inner Surface Designs. This has to do with the various functional molded surface designs, and it is one of the most useful identification features included in the scheme. The many varieties represented have been classified into three main groups:

Curvilinear: Designs which are circular or round, and include two or more annular zones. See Figures 1-4 for typical patterns.

Chart I

MANUFACTURER'S EMBOSSED CAR AND/OR YEAR DESIGNATIONS

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
AMERICAN MOTORS					
HUDSON:					
Commodore:					
1950	1	220448	—	HUDH	—
1951	2	225134	—	HUH	—
1952-Early	3	230724	19602	HUG	1; 10
1952-Late	4	233490	CB19896	HUG	1; 15
1953-1959	*				
Hornet:					
1950	*				
1951	2	225134	—	HUH	—
1952-Early	3	230724	19602	HUG	1; 10
1952-Late & 1953	4	233490	CB19896	HUG	1; 15
1954	5	240922	CB22448	HUJ	1
1955	6	3142621	948	HUK	12; 26
1956-1957	7	3147140	—	HUPDL	—
1958-1959	*				
Jet:					
1950-1952	*				
1953-1954	8	235842	22790	HUPDJ	—
1955-1959	*				
Pacemaker:					
1950	9	213415	15063	HUA	—
1951-1952	10	225179	18477	HUF	1; 10
1953-1959	*				
Super:					
1950	1	220448	—	HUDH	—
1951	2	225134	—	HUH	—
1952-1959	*				
Wasp:					
1950-1951	*				
1952-1953	10	225179	18477	HUF	1; 10
1954	5	240922	CB22448	HUJ	1
1955	6	3142621	948	HUK	12; 26
1956-1957	7	3147140	—	HUPDL	—
1958-1959	*				
METROPOLITAN:					
1954-1959	182	8110880	—	—	20
NASH:					
Ambassador:					
1950	11	3112935	—	JER	—
1951	12	3114560	CB19276	NAC	1; 24
1952-1954	13	3134318	—	NAPDI	—
1955	14	3140553	23265	NAPDK	—
1956	15	3119233	G739	STAT	7
1957	16	3200148	24428	NAPDM	—
1958-1959	*				
Rambler:					
1950-1955	17	3128952	—	NASHPD	—

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
NASH:—Continued					
Rambler:—Continued					
1956	18	3145467	6732	RAMB	7
1957	19	3200129	G1254	RA57	7
1958–1959	*				
Rambler Ambassador:					
1950–1957	*				
1958	20	3200631	CB27116	NAM	1
1959	21	3422001	—	RA58; ALHL	—
Rambler American:					
1950–1957	*				
1958–1959	17	3128952	—	NASHPD	—
Rambler Six:					
1950–1957	*				
1958–1959	21	3422001	—	RA58; ALHL	—
Rebel:					
1950–1957	*				
1958–1959	21	3422001	—	RA58; ALHL	—
Statesman:					
1950	11	3112935	—	JER	—
1951	12	3114560	CB19276	NAC	1; 24
1952–1954	13	3134318	—	NAPDI	—
1955	14	3140553	23625	NAPDK	—
1956	15	3119233	G739	STAT	7
1957–1959	*				
CHRYSLER					
CHRYSLER:					
Chrysler 300:					
1950–1954	*				
1955–1956	22	(1594873)	CB24173	CHRBS	1; 15; 16
1957–1959	23	(1689983)	CB25676	CHRCI	1; 2; 15; 16
Crown Imperial:					
1950	✱				
1951–1953	24	(1369605)	CB18632	CHRAW	1; 2; 15; 16
1954	25	(1540742)	CB22553	CHRBK	1; 2; 15; 16
1955	26	(1594605)	CB24123	CHRBK	1; 2; 15
1956–1959	✱				
Imperial:					
1950	27	(1297832)	CB16021	DESAI; DODAA	2; 14; 16; 23
1951–1953	24	(1369605)	CB18632	CHRAW	1; 2; 15; 16
1954	25	(1540742)	CB22553	CHRBK	1; 2; 15; 16
1955–1956	26	(1594605)	CB24123	CHRBK	1; 2; 15
1957	28	(1704937)	CB25630	IMPAD	1; 2; 15; 16
1958	29	(1832088)	JL41295	IMPAF	2; 9
1959	30	(1832088)	JL41295	IMPAF	2; 9
New Yorker:					
1950	27	(1297832)	CB16021	DESAI; DODAA	2; 14; 16; 23
1951–1952	31	(1370128)	CB18693	CHRAV	1; 2; 15; 16
1953	32	(1495590)	21648	CHRBH	1; 2; 15; 16
1954–Park	33	(1546161)	CB22612	CHRBK	1; 2; 15; 16

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
CHRYSLER:—Continued					
New Yorker:—Continued					
1954-Turn	34	(1546176)	CB22600	CHRBM	1; 15; 16
1955	35	(1604778)	CB24372	CHRBW; RIGHT	1; 2; 15; 16
1956	36	(1648752)	CB24998	CHRCB	1; 15; 16
1957	23	(1689983)	CB25676	CHRCI	1; 2; 15; 16
1958	37	(1832048)	—	DESBG	2
1959	38	(1754894)	JL41438	CHRCL; AANM	2; 9
Saratoga:					
1950	*				
1951-1952	39	(1345458)	CB17960	CHRAT	1; 2; 15; 16
1953-1956	*				
1957	23	(1689983)	CB25676	CHRCI	1; 2; 15; 16
1958	37	(1832048)	—	DESBG	2
1959	38	(1754894)	JL41438	CHRCL; AANM	2; 9
Windsor:					
1950	40	(1343218)	CB17337	CHRAO	2; 15; 16; 23
1951-1952	39	(1345458)	CB17960	CHRAT	1; 2; 15; 16
1953	41	(1495702)	CB21672	CHRB1	1; 2; 15; 16
1954-Park	33	(1546161)	CB22612	CHRBN	1; 2; 15; 16
1954-Turn	34	(1546176)	CB22600	CHRBM	1; 15; 16
1955	22	(1594873)	CB24173	CHRBS	1; 15; 16
1956	36	(1648752)	CB24998	CHRCB	1; 15; 16
1957	23	(1689983)	CB25676	CHRCI	1; 2; 15; 16
1958	37	(1832048)	—	DESBG	2
1959	38	(1754894)	JL41438	CHRCL; AANM	2; 9
De Soto:					
1950	27	(1297832)	CB16021	DESAI; DODAA	2; 14; 16; 23
1951-1952	42	(1345983)	CB18422	DESAL	1; 2; 15; 16
1953	43	(1495392)	CB21601	DESAR	1; 2; 15; 16
1954	44	(1540544)	CB22542	DESAU	1; 2; 15; 16
1955	45	(1594583)	CB24088	DESAX	1; 2; 15; 16
1956	46	(1642073)	CB25075	DESBH	1; 2; 15; 16
1957	47	(1704893)	CB25688	DESBF	1; 2; 15; 16
1958	37	(1832048)	—	DESBG	2
1959	48	(1754864)	—	DESBK	2
DODGE:					
1950	49	(1339785)	CB17083	DODAI	2; 15; 16; 23
1951-1954	50	(1440340)	CB19490	DODAN	1; 2; 15; 16
1955-1956	51	(1604210)	CB24258	DODBD	1; 2; 15; 16
1957	52	1689988	689886	DODBL	2; 3
1958	53	(1832028)	—	DODBO; CDDP	3
1959	54	1832218	1755064	DODBV	2
PLYMOUTH:					
1950	55	(1340270)	CB17246	PLYAM	2; 15; 16; 23
1951-1952	56	(1345479)	CB17918	PLYAO	1; 2; 15; 16
1953-Early	57	(1440093)	CB19430	PLYAR	1; 2; 15; 16
1953-Late	58	(1527442)	CB22112	PLYAR	1; 2; 15; 16
1954-Early	59	(1540170)	CB22549	PLYAX	1; 2; 15; 16
1954-Late	60	(1594395)	CB24047	PLYAX	1; 2; 15; 16

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
PLYMOUTH:—Continued					
1955	61	(1595187)	CB24303	PLYBA	1; 2; 15; 16
1956	62	(1688539)	CB25404	PLYBF	1; 2; 15; 16
1957	63	(1689859)	73469	PLYBG	1; 15; 16; 23
1958	64	(1832008)	JL41286	PLYBM	2; 9
1959	65	1879590	1902946	PLYPV	2; 15; 16
FORD MOTORS					
EDSEL:					
1950–1957	*				
1958	66	B8E13208B	FEY13209B	EFPT58	4
1959	67	PB9E13208A	—	EPT59	4; 27
FORD:					
1950	68	OA13208	—	FPT50; RH; LH	4
1951	69	IA13208	—	FPT51	4
1952	70	FAA13208B	—	FPT52	4
1953	71	FAF13208A	—	FPT53	4
1954	72	FAG13208B	—	FPT54	4; 25
1955	73	B5A13208B	—	FPT55	4
1956	74	B6A13208A	—	FPT56	4
1957	75	B7A13208A1	—	FPT57; RH	4
1958	76	B8A13208A	—	FPT58; RH	4
1959	77	B9AF13208A	—	FPT59	4; 23; 28
LINCOLN:					
All Models:					
1950	78	OL13208	—	LPT50; RH	4
1951	79	IL13208	—	LPT51	4
1952–1953	80	FAC13208A	—	LPT52	4
1954–1955	81	FDD13202B	—	LPT54; RH	4
1958	82	FFC13208D	—	LPT58	4
1959	83	PB9L13208A	—	LPT59	4
Capri:					
1956	84	FDU13208A	—	LPT56; RH; LH	4
1957	85	FEL13208B	—	LPT57; RH; LH	4
Continental:					
1956–1957	86	4046989	946	CPT56	4; 26
Premier:					
1956	84	FDU13208A	—	LPT56; RH; LH	4
1957	85	FEL13208B	—	LPT57; RH; LH	4
MERCURY:					
1950	87	OM13208	—	MPT50	4
1951	88	(IM13208)	—	MPT51R	4; 15
1952–1953	89	FAB13208A	—	MPT52	4; 25
1954	90	(FAH13208A)	—	MPT54	4; 15
1955–1956	91	FDK13208A	—	MPT55	4; 15
1957	92	FEK13208D	—	MPT57; RH	4; 15
1957-Quadra-lites	93	FEK13208E	—	MPT57A	4
1958	94	FEW13208C	FEW13208B	MPT58	4
1959	95	PB9M13208A	2702512	MPT59; RH; LH	4
THUNDERBIRD:					
1950–1954	*				

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
THUNDERBIRD:—Continued					
1955–1956	72	FAG13208B	—	FPT54	4; 25
1957	96	B7S13208A1	—	FSPT57; RH	4; 18
1958–1959	97	B8S13208A	24992	FSPT58; RH	4; 6; 11; 18
GENERAL MOTORS					
BUICK:					
All Models:					
1950–1952	98	(5938915)	—	F40	5; 23
1953–1954	99	(5943810)	—	F453	5; 23
1956–1957	102	(5947045)	—	F456	5
1958	103	(5949368)	—	F458	5
1959	104	(5949932)	—	F459	5; 19
40–60 Series:					
1955	100	(5945947)	—	F455	5
50–70 Series					
1955	101	(5945896)	—	F4A55	5
CADILLAC:					
All Models:					
1950–1955	105	(5935955)	—	F45	5; 10
1950–1952**	110	(5939152)	—	A50	5; 23
1953**	111	(5944010)	—	A553	5
1954**	112	(5945103)	—	A554	5; 23
1955**	113	(5946910)	—	A555	5
1956	106	(5945728)	—	F355	5
1956**	114	(5947067)	—	A556	5
1959	109	(5950033)	—	F5A59	5
1959**	117	(5949972)	—	AF559	5; 23
All Models, Excepting Brougham					
1957	107	(5947908)	—	F5A57	5
1957**	115	(5948084)	—	A557	5; 23
1958	108	(5949136)	—	F558	5
1958**	116	(5949192)	—	A558	5
Brougham:					
1957–1958	118	(5947620)	—	A5A57	5
CHEVROLET:					
1950	119	(5939299)	—	F10	5; 10
1951	120	(5939934)	—	F151	5
1952	121	(5943032)	—	F152	5
1953	122	(5943220)	—	F153	5; 10; 23
1954	123	(5942343)	—	F154	5; 23
1955	124	(5945859)	—	F155	5
1956	125	(5947140)	—	F156	5
1957	126	(5947754)	—	F157	5
1958	127	(5949100)	—	F158	5
1959	128	(5950114)	—	F159	5
CORVETTE:					
1950–1952	*				
1953–1959	129	(5936929)	—	F57	5; 10

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
OLDSMOBILE:					
All Models:					
1950	139	(5938319)	—	F39	5
1953	142	(5944027)	—	F353	5
1954	143	(5941748)	—	F354	5
1955	106	(5945728)	—	F355	5
1956	144	(5947087)	—	F356	5
1957	145	(5948507)	—	F357	5
1958	146	(5949175)	—	F358	5
1959	147	(5949997)	—	F359	5
76 and 88A:					
1951	139	(5938319)	—	F39	—
88 Deluxe:					
1952	140	5940023	—	F351	5
88 Super:					
1951-1952	140	5940023	—	F351	5
98:					
1951	139	(5938319)	—	F39	—
1952	141	(5942778)	—	F352	5
PONTIAC:					
1950	130	(5939313)	—	F20	5; 10
1951-1952	131	(5939984)	—	F251	5; 10
1953	132	(5940671)	—	F253	5
1954	133	(5945178)	—	F254; RH	5
1955	134	(5945790)	—	F255	5
1956	135	(5946847)	—	F256	5
1957	136	(5948352)	—	F257	5; 23
1958	137	5948853	—	F258	5
1959	138	(5950092)	—	F259; RH	5
STUDEBAKER-PACKARD					
PACKARD:					
Clipper:					
1950-1952	*				
1953-1954	163	439177	22731	PAPDJ	23
1955	167	458900	5946448	F855; RH	5
1956	168	6484448	23848	PAPDL	—
1957	169	1323138	—	57LP	6; 12; 26
1958-1959	*				
Hawk:					
1950-1957	*				
1958	170	1312867	—	56PC	6; 12
1959	*				
Packard:					
1950-Custom 8	160	399332	—	PAPDE	—
1950-Straight 8	159	393625	—	HOH	—
1951-1952 Early	161	410929	—	PAPDH	—
1951-1952 Late	162	439078	—	PAPDH	—
1953-1954	163	439177	22731	PAPDJ	—
1955	164	458968	RG728	GERGLO	—

Chart I—CONTINUED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
PACKARD:					
Packard— <i>Continued</i>					
1956	165	6484432	—	—	6; 8
1957	*				
1958	166	(1327968)	CB27258	58LP; R	1
1959	*				
STUDEBAKER:					
Champion:					
1950–1951	171	289716	CB15474	D96	24
1952–Early	172	296175	19533	3HD	1; 10
1952–Late	173	295930	19869	3HD	1
1953–1954	174	297572	CB22000	4HD	1; 15
1955	175	(308098)	CB24064	6HD	1
1956	176	(1312666)	—	STU	6; 7
1957–1958	177	1320097	0325843	57DP; R; L	1
1959	*				
Commander:					
1950	178	289739	CB15432	D17A	—
1951	171	289716	CB15474	D96	24
1952–Early	172	296175	19533	3HD	1; 10
1952–Late	173	295930	19869	3HD	1
1953–1954	174	297572	CB22000	4HD	1; 15
1955	175	308098	CB24064	6HD	1
1956	176	(1312666)	—	STU	6; 7
1957–1958	177	1320097	0325843	57D; R; L	1
1959	*				
Hawk:					
1950–1955	*				
1956–1958	170	1312867	—	—	6
1959	179	1332601	921969	59PC	5
Lark:					
1950–1958	*				
1959	180	1331552	—	59DP	6; 13
President:					
1950–1954	*				
1955	175	308098	CB24064	6HD	1
1956	176	(1312666)	—	STU	6; 7
1957–1958	177	1320097	0325843	57DP; R; L	1
1959	*				
WILLYS MOTORS					
KAISER:					
Frazer:					
1950	148	204570	—	FRA; RIGHT	—
1951	149	207298	—	FRG	—
1952–1959	*				
Henry J:					
1950	*				
1951–Early 1952	150	209989	—	KAPDH	—
Late 1952–1953	151	213728	—	KAPDI	—
1954–1959	*				

Chart I—CONCLUDED

Make, Model, and Year	Lens No.	Embossed Car and/or Year Designations			
		Part Number	Other Numbers	Letters	Supplementary Data (see key)
KAISER:—Continued					
Kaiser:					
1950	152	204575	713334	KADF	10
1951–Early 1952	153	718138	21689	KADH	22
Late 1952–1953	154	213687	—	FRH	1
1954	155	215772	—	KPDJ	—
1954–1959	*				
WILLYS:					
FC150 & FC170:					
1950–1957	*				
1958–1959	153	718138	21689	KADH	22
Jeepster:					
1950–1951	156	648904	14940	DODAM	1; 10
1952–1959	*				
Passenger:					
1950–1951	*				
1952–1954	157	119206	19525	WOA	10
1955	153	718138	21689	KADH	22
1956–1959	*				
Station Wagon & 4x4 Truck:					
1950–1951	156	648904	14940	DODAM	1; 10
1952–1959	157	119206	19525	WOA	10
Universal Jeep:					
1950–Early 1953	158	641556	—	—	—
Late 1953–1959	157	119206	19525	WOA	10
547 Sport Car:					
1950–1953	*				
1954–1955	181	215488	23027	KPDJ	—
1955–1959	*				

* Not manufactured.
() Part number embossed on lens.

‡ Data not available.
** Fog, parking and turn signal lens.

Rectilinear: Designs which are characterized by rectangles, squares, or straight parallel lines (does not include striations). See Figures 13 and 14 for typical patterns.

Lenticular: Designs which are “lens-like” in shape. See Figures 5–12 for typical patterns.
Only one of the 182 lenses studied was found to have no molded surface design (Lens No. 145), and is so indicated on Chart IIA.

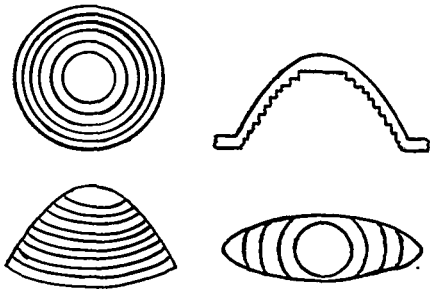


FIG. 1-4

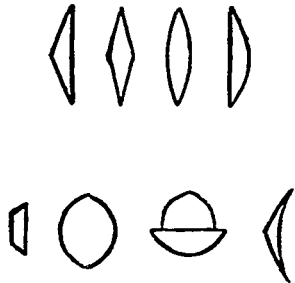


FIG. 5-12

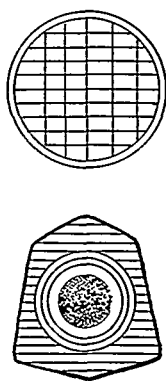


FIG. 13-14

A study of the information tabulated under this heading will reveal that many of the lenses are characterized by a combination of two (see Figure 14), or even three of the above main classifications. Such combinations when found supply an identification feature having selective value.

Lens Shape (N/D Expression For Use with Chart IIA Only). A person viewing the complete collection of 182 lenses for the first time would be struck by the variety of lens shapes represented. Advantage was taken of these varieties through a series of surface measurements effected with a Geneva lens gauge. Through data resulting from its use, as given by an N/D expression, it is possible to gain useful information regarding the shape of the intact lens from which the fragment(s) originated.

Such an expression is obtainable from the outer surface of all lenses excepting those having molded surface patterns on both inner and outer surfaces. This feature is determinable, at least in part, regardless of location on the lens, and is independent of the character of molded designs on the inner surface.

Advantage was taken of the fact that at any location on the lens surface, curvature, as indirectly reflected through the N/D expression, was associated with one of the basic molded inner surface designs, i.e., curvilinear, lenticular, rectilinear. This was accomplished by determining a N/D expression for each variety of underlying molded design present. The data thus gathered was entered where applicable, under the appropriate column heading.

General Considerations.

The sample size required is approximately

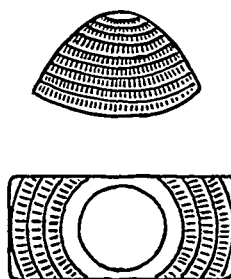


FIG. 15-16

that of a 25¢ piece. This dimensional limitation is imposed by the distance separating the 2 outermost posts of the Geneva gauge.

All readings between ± 1 diopters are read as zero.

Readings are made to an accuracy of $\pm \frac{1}{4}$ diopter when the lens fragment is plastic, and ± 1 diopter when it is glass.

All readings should be taken with the Geneva gauge held at right angles to the lens surface.

Procedure for Determination.

The long axis of the gauge is positioned to correspond with the lengthwise direction of the molded pattern and readings taken. See Figure 17. A second series of readings is taken at 90 degrees to the first. See Figure 18.

The first set of readings in diopters is established as a range and recorded as the numerator (N), and similarly the second is recorded as the denominator (D).

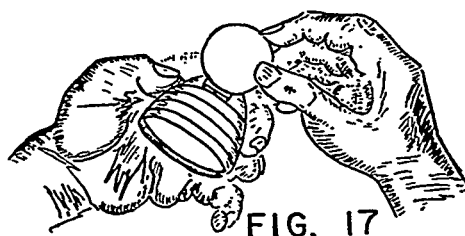


FIG. 17

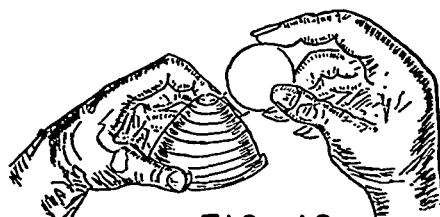


FIG. 18

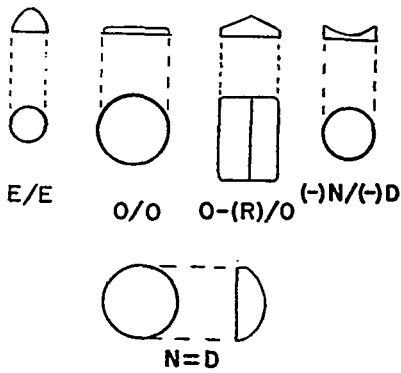


FIG. 19-23

Procedure For Searching Data.

Search under the column heading "N/D Expression" for ranges of N and D which will include that recorded for the question fragment. This search needs only to include readings which are associated with the one or more basic designs which underlies the surface from which the ranges were established.

It is recognized that in practice the questioned fragment(s) can be of such dimensional form that one part of the expression is determinable but the other is not. A search of the data for either N or D, as applicable, can still provide useful eliminative information.

Special Considerations.

The designation E occurring as part of the N/D Expression signifies the presence of a central area which is extreme in curvature, thus beyond the reading limits of the Geneva gauge. See Figure 19.

The designation (R) occurring as part of the N/D Expression signifies the presence of a prominent angular ridge and is diagnostic of lenses having shapes similar to Figure 21. Recorded readings which precede the (R) were made by reading up to but not over the ridge.

Lenticular designs are usually in such a combination as to present a cruciform appearance (Figure 24). For this reason it was found necessary to record two sets of N/D Expressions for this design category: one for the 12 to 6 o'clock position; the other for the 3 to 9 o'clock position. Each is independent of the other.

The greater majority of lenses bearing circular designs are of such shape that no confusion will arise in determining the directions of N and D.

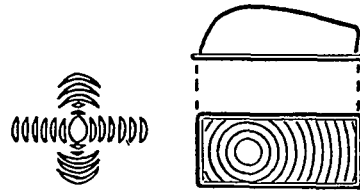


FIG. 24

FIG. 25

Some, however, are of such form that N and D can be reversed (Figure 25). The few lenses to which this consideration is applicable have the designation Rev. following the recorded reading. *Lens Shape Suggested From N/D Expression.*

An understanding of N/D coupled with a little imagination will allow the postulation of the probable lens shape. Figures 19-23 show typical lens shapes identified by the kind of expression which results from each.

Zone or Ridge Count. This feature is determinable from curvilinear or rectilinear designs only. Its applicability as an identification feature is in that it accounts for obvious differences in spacings of concentric zones (curvilinear designs) or ridges (rectilinear designs).

The count for either kind of design is made with a pair of dividers set for a span of $\frac{5}{8}$ ". The number of zones (or ridges) included is determined by setting one pointer at the bottom of a molded design while the other is brought to rest over the furthestmost zone (or ridge). If the fragment is less than $\frac{5}{8}$ " in the required direction an approximate count can be made by a careful extrapolation.

The spacings of zones and ridges can vary in a given lens. Data recorded under this category reflect these variations by being entered as ranges wherever applicable.

Embossings. This classification feature has to do with small, usually rounded embossings. Several varieties are shown through Figures 26-31. No attempt was made to sub-classify this feature on the basis of varieties represented. However, it is extremely useful for direct comparison against known lenses.

The fact that these embossings were usually present within one or more of the basic molded designs was used to tabulate the data under the column heading "Embossings". The data was entered by placement of an x under present or absent, or both, as applicable. A further explana-

Chart IIA

CLASS FEATURES OF LENSES HAVING MOLDINGS ON ONE SIDE ONLY

Lens No.	Material		Striations		Design			N/D Expression	Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	Remarks
	Glass	Plastic	Present	Absent	Circular	Lenticular	Rectilinear			Present	Absent		
1	x			x			x	0-5 $\frac{1}{4}$ /15+	4 #	x		*	mostly frosted w/o moldings; center clear
2	x			x			x	0-3 $\frac{1}{4}$ /0	5		x	*	
3	x			x			x	nm(R)/(-)1-2 $\frac{3}{4}$; 1-2/0-6 $\frac{1}{2}$ (R)	*	x	x	*	
4		x		x			x	1 $\frac{1}{2}$ -3/1-5	10		x	*	greater part frosted; center clear
5		x		x			x	nm(R)/1-3 $\frac{1}{4}$; 1-2/1 $\frac{1}{2}$ -6 $\frac{1}{2}$ (R)	*	x	x	*	
6		x		x			x	2-3/3-3 $\frac{1}{4}$	9-10		x	*	
7		x		x			x	4-11 $\frac{1}{2}$ /2 $\frac{1}{4}$ -7; 1 $\frac{3}{4}$ -2/3 $\frac{1}{4}$ -3 $\frac{1}{2}$	*	x	x	*	2 embossed center zones; outer eccentric clear 1 $\frac{5}{16}$ " center zone
8		x		x			x	2-5/3 $\frac{1}{2}$ -4 $\frac{1}{2}$	10		x	*	
9		x		x			x	0(R)/0(R)	4	2		18-21 $\frac{1}{32}$	
10		x		x			x	0(R)/0-1 $\frac{1}{2}$	15		x	*	twin lenses as one piece embossings very faint
11		x		x			x	0/3 $\frac{1}{2}$ -4 $\frac{1}{2}$; 3-4/nm	*		x	*	
12		x		x			x	0/1 $\frac{3}{4}$ -3 $\frac{3}{4}$	3-6		x	*	
13		x		x			x	2 $\frac{3}{4}$ -4/1-6 $\frac{1}{2}$	10	2		*	embossings: lenti. faint, face ¹ pron. excepting R, 2-4 best N/D
14		x		x			x	2 $\frac{1}{4}$ -4 $\frac{1}{4}$ /0; np	*		x	*	
15		x		x			x	3 $\frac{3}{4}$ -5 $\frac{1}{2}$ /1 $\frac{1}{2}$ -3 $\frac{1}{2}$; 0-3/0-3	*	x	x	*	
16		x		x			x	1 $\frac{1}{2}$ -3 $\frac{1}{4}$ /nm	10 #		x	*	painted grey in part
17		x		x			x	0-3/0-3	4		x	$\frac{3}{4}$	
18		x		x			x	nm(R)/0-1 $\frac{1}{2}$; 0/8-15(R)	*	x	x	*	
19		x		x			x	8-13 $\frac{1}{2}$ (R)/0	9-10		x	*	prominent center ridge
20		x		x			x	0/2 $\frac{3}{4}$ -5; 8 $\frac{3}{4}$ -10 $\frac{1}{2}$ /nm	*	x	x	*	
21		x		x			x	nm(R)/0; 0/nm(R)	*	x	x	*	
22		x		x			x	0/2-3(R)	10		x	*	prominent center ridge
23		x		x			x	9 $\frac{1}{2}$ -E/4 $\frac{1}{2}$ -E	4-6	3		17 $\frac{1}{32}$	
24		x		x			x	1 $\frac{1}{2}$ -8 $\frac{1}{2}$ /0-15+	2-10		x	*	
25		x		x			x	12 $\frac{1}{2}$ -E/6 $\frac{1}{2}$ -E	4-5		x	$\frac{1}{2}$	E due to center zone projection
26		x		x			x	nm(R)/0-2; 0-1 $\frac{1}{4}$ /3 $\frac{1}{2}$ -8(R)	*		x	*	
27		x		x			x	0-2/3-6	5		x	*	
28		x		x			x	2-8 $\frac{3}{4}$ /4-9	2-5		x	*	sides project forward $\frac{1}{2}$ "; surface clear same as 29 except has reflective surface
29		x		x			x	nm(R)/0-11 $\frac{1}{2}$; 0-1 $\frac{1}{2}$ /5-14(R)	*		x	*	
30		x		x			x	0/5-10 $\frac{3}{4}$	3-6		x	*	
31		x		x			x	0/0	8-16		x	15 $\frac{1}{32}$	sides project forward $\frac{1}{2}$ "; surface clear same as 29 except has reflective surface
32		x		x			x	9-E/7-E	5-6		x	17 $\frac{1}{32}$	
33		x		x			x	4 $\frac{3}{4}$ /4 $\frac{3}{4}$	2-4		x	27 $\frac{1}{32}$	
34		x		x			x	0/2-2 $\frac{3}{4}$ (R); nm(R)/0	*	x	x	*	sides project forward $\frac{1}{2}$ "; surface clear same as 29 except has reflective surface
35		x		x			x	2 $\frac{1}{4}$ -2 $\frac{3}{4}$ /nm	9-10 #		x	*	
36		x		x			x	4 $\frac{1}{2}$ -4 $\frac{3}{4}$ /4 $\frac{1}{2}$ -5	3-5	3		$\frac{3}{4}$	
37		x		x			x	4 $\frac{1}{2}$ -E/4 $\frac{1}{2}$ -E	2-4		x	1	sides project forward $\frac{1}{2}$ "; surface clear same as 29 except has reflective surface
38		x		x			x	6 $\frac{1}{2}$ -7/6 $\frac{1}{2}$ -7 $\frac{1}{2}$	3-4	1		17 $\frac{1}{6}$	
39		x		x			x	3 $\frac{3}{4}$ -4/3 $\frac{3}{4}$ -4	10		x	17 $\frac{1}{32}$	
40		x		x			x	3 $\frac{3}{4}$ /3 $\frac{3}{4}$	10		x	$\frac{5}{16}$	

Chart IIA—CONTINUED

Lens No.	Material		Striations		Design		N/D Expression	Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	Remarks
	Glass	Plastic	Present	Absent	Circular	Rectilinear			Present	Absent		
31	x		x		x		0/2½-4; 6-11/nm	*	x		*	slight vertical center ridge
						x	2¾-4/nm	10		x	*	
33	x		x		x		0/0-5¾; 3/nm	*	x		*	
34	x		x		x		2¾-7/0-3¾	4-5	x		5/8	very small lenti. zone, centrally
						x	nm/nm	*	x		*	
35	x		x		x		6½-6¾/0	4-5	x		*	
						x	6½-7/0; 0/nm	*	x		*	
36	x		x		x		0/0	2-4	x		*	slight frosting of clear areas
						x	0/0; 0/0	*	x		*	
37	x		x		x		E/E	6-9	x		5/16	
38	x		x		x		8½/8½	9-10	x		17/32	very faint frosting except center zone
39	x		x		x		5½-R/1¼-2½; 2/nm	*	x	x	*	faint horizontal center ridge
						x	1-2½/nm	10		x	*	
40	x		x		x		1/0(R); nm(R)/1	*	x	x	*	
						x	0/0	10	x		*	
43	x		x		x		0/1-2½	2-4	x		1	
						x	0/nm; 0-2/nm	*	x		*	
44	x		x		x		7¾/7¾	3-5	3		¾	
45	x		x		x		0/0	2-3	x		*	
						x	0/0; 0/nm	*	x		*	
						x	0/0	10	x		*	
46	x		x		x		0/(-)-(-)4	4-5	x		*	
						x	0/nm; nm/nm	*	x		*	
						x	0/(-)2-(-)2¾	9	x		*	
47	x		x		x		E(-)/0-(-)2¼	2	x		*	extreme concavity
48	x		x		x		0/0	7	x		7/16	
49	x		x		x		5-5½/5-5½	3-4	1		¾	
50	x		x		x		7¾-E/2¾-E	4	2		27/32	
51	x		x		x		3½-4/3½-4	3-4	x		17/16	
52	x		x		x		5/5	2	x		*	design similar to headlamp design
53	x		x		x		2¾/2¾	10	x		19/32	faint frosting except center zone
54	x		x		x		0/0	4-7	x		21/32	sides mirrored, project forward 1¼"
55	x		x		x		0/0-1(R); nm(R)/0	*	x	x	*	
						x	0-1¼/0	10	x		*	—
56	x		x		x		0/1½-3¼(R); nm(R)/0	*	x	x	*	
						x	1½-2¾(R)/nm	9-10		x	*	
57	x		x		x		nm(R)/0-1¾; 0/6¾-15+(R)	*	x	x	*	
						x	5½-E/0-2	9-10	x		*	
58	x		x		x		nm(R)/0-2; 0/8-15+(R)	*	x	x	*	
						x	6-9/0-1½	9	x		*	
59	x		x		x		8-E/2-E	3-4	2		27/32	
60	x		x		x		8½-E/3-E	3-4	2		13/16	mirrored sides

Chart IIA—CONTINUED

Lens No.	Material		Striations		Design			N/D Expression	Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	Remarks
	Glass	Plastic	Present	Absent	Circular	Lenticular	Rectilinear			Present	Absent		
61	x	x	x	x	x			0/0 0/0; 0/nm	4-5 *	x	*	*	mirrored sides
62	x	x	x	x	x			0/0 0/0; 0/nm	4-5 *	x	*	*	mirrored sides
63	x	x	x	x				$5\frac{3}{4}/5\frac{3}{4}$	9-10	x	$\frac{5}{16}$	*	mirrored sides
64	x	x	x	x				0/0	10	x	$1\frac{1}{32}$	$\frac{1}{32}$	very faint frosting
65	x	x	x	x	x			$0/3\frac{3}{4}-6\frac{1}{2}$; $5\frac{1}{2}-6$ /nm	*	x	*	*	mirrored sides
							x	$0/3-3\frac{1}{2}$	3	x	*	*	
67	x	x	x	x				$0-4\frac{3}{4}/0$ Rev.	12-14	x	$7-9\frac{3}{32}$	*	slight frosting
							x	$0/3\frac{1}{4}-8\frac{1}{4}$	6-11	x	*	*	
68	x	x	x	x				0/0-2	3-5	1	1	1	
69	x	x	x	x				E/E	20 #	1	$2\frac{7}{32}$	$\frac{1}{32}$	
70	x	x	x	x				E/9-E	4	x	$\frac{1}{2}$	*	some parts frosted
							x	$4\frac{1}{4}-E/0$	10	x	*	*	
71	x	x	x	x				$0/2\frac{1}{4}-2\frac{3}{4}$ Rev.	5-6	3	$\frac{3}{4}$	$\frac{1}{16}$	slight frosting
72	x	x	x	x				E/5-E	4-5	1	$1\frac{1}{16}$	$\frac{1}{16}$	slight frosting
73	x	x	x	x				$9-E/3\frac{1}{2}-E$	3-6	3	$1\frac{1}{16}$	$\frac{1}{16}$	slight frosting
77	x	x	x	x				$9-E/6-E$	4	3	$\frac{5}{8}$	$\frac{5}{8}$	
78	x	x	x	x				$0/0-2\frac{1}{4}$	4-5	1	$\frac{5}{8}$	$\frac{5}{8}$	
79	x	x	x	x	x			$2-6(R)/0-1\frac{1}{2}$	10 #	x	*	*	hor. embossed band; clear recessed center
80	x	x	x	x				0/0	8 #	x	$\frac{9}{16}$	$\frac{9}{16}$	recti. recessed ctr. w/circular design
							x	$0/5\frac{1}{2}-6\frac{1}{2}$; np	*	x	*	*	
							x	$2\frac{1}{4}-6\frac{1}{2}(R)/0$	7-10 #	x	*	*	
81	x	x	x	x				$0/0-5\frac{1}{2}$ Rev.	3-6	3	$\frac{7}{8}$	$\frac{7}{8}$	
							x	$2\frac{1}{2}-9\frac{1}{2}/0$	9	x	*	*	
82	x	x	x	x				$0-2\frac{3}{4}/0$ Rev.	4-9	x	$\frac{9}{32}$	$\frac{9}{32}$	slightly frosted
83	x	x	x	x				$1\frac{1}{4}-1\frac{1}{2}/1\frac{1}{4}-1\frac{1}{2}$	7-10	5	$\frac{1}{4}$	$\frac{1}{4}$	sides painted white project forward $\frac{1}{2}$ "
84	x	x	x	x				0/0	5-7	2	$1\frac{1}{16}$	$1\frac{1}{16}$	some zones faint frostiness
85	x	x	x	x				0/0	4-10	8	$\frac{5}{32}$	$\frac{5}{32}$	
86	x	x	x	x				0/0	5-9	x	$2\frac{1}{32}$	$2\frac{1}{32}$	four center zones slightly frosted
87	x	x	x	x				$6\frac{3}{4}-13/7-E$	4-6	1	$\frac{3}{4}$	$\frac{3}{4}$	
88	x	x	x	x	x			$0/3\frac{1}{2}-5\frac{1}{4}(R)$	4-5	1	*	*	clear recessed circular center
89	x	x	x	x				$8\frac{1}{4}/8\frac{1}{4}$	6	x	$\frac{9}{16}$	$\frac{9}{16}$	
90	x	x	x	x				$0/0-5\frac{1}{2}$ Rev.	4-6	4	$1\frac{5}{16}$	$1\frac{5}{16}$	
							x	$4-10\frac{1}{4}/0$	9	x	*	*	
91	x	x	x	x				$11\frac{3}{4}-E/3-E$	5-6	1	$1\frac{7}{32}$	$1\frac{7}{32}$	some parts frosted
							x	$3\frac{3}{4}-6\frac{3}{4}/0$	10	x	*	*	
93	x	x	x	x				0/0	5-8	x	$\frac{7}{32}$	$\frac{7}{32}$	frosted
94	x	x	x	x				0/0	6-9	2	$\frac{1}{2}$	$\frac{1}{2}$	
95	x	x	x	x				0/0	9-11	5	$\frac{1}{2}$	$\frac{1}{2}$	embossings very faint
96	x	x	x	x				0/0	6-7	x	$\frac{1}{2}$	$\frac{1}{2}$	
97	x	x	x	x	x			$0-1\frac{1}{2}/0$; $0/1-1\frac{1}{2}$	*	x	*	*	some parts slightly frosted
							x	$0/0-1\frac{1}{2}$	11	x	*	*	
99	x	x	x	x				$10\frac{1}{2}/10\frac{1}{2}$	9-10	x	$\frac{3}{16}$	$\frac{3}{16}$	

Chart IIA—CONTINUED

Lens No.	Material		Striations		Design			N/D Expression	Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	Remarks
	Glass	Plastic	Present	Absent	Circular	Lenticular	Rectilinear			Present	Absent		
100		x		x	x			3-9/3-5 $\frac{1}{4}$	10	x		$\frac{3}{16}$	very slight frosting
101		x		x	x			1-3/1-3	10	x		$\frac{1}{4}$	
102		x	x		x			E/6-E	3-5	x		$\frac{1}{4}$	
103		x		x	x			14-E/6 $\frac{1}{4}$ -E	4-6	x		$\frac{9}{32}$	
104		x		x	x			0/0-5 $\frac{3}{4}$ Rev.	8	x		$\frac{5}{16}$	
105	x			x	x			E/7 $\frac{1}{2}$ -E	8	x		$\frac{3}{4}$	
106		x	x		x			E/7 $\frac{1}{2}$ -E	6-7	x		$\frac{1}{4}$	
107		x	x		x			E/8 $\frac{1}{2}$ -E	6-7	x		$\frac{3}{16}$	
108		x		x	x			0/0	8	x		$\frac{3}{8}$	
109		x		x	x			0/0	3	x		$\frac{1}{4}$	
110	x			x			x	4 $\frac{1}{2}$ /4 $\frac{1}{2}$	2-3	x		*	moldings outer surface only
111		x		x			x	1-1 $\frac{1}{4}$ /1-1 $\frac{1}{4}$	1-2	x		*	
112		x		x	x			3-5/3-5	2	x		$\frac{7}{4}$	
113		x		x			x	0-2 $\frac{3}{4}$ /0	1-2	x		*	
114		x		x			x	0/0	1-2	x		*	
115	x			x			x	(-)-2 $\frac{1}{4}$ -(-)-4 $\frac{1}{4}$ /(-)-2-(-)-4 $\frac{1}{4}$	2-3	x		*	
117	x			x			x	0/0	2-3	x		*	
118		x		x			x	0-1 $\frac{1}{4}$ (R)/0	1-2	x		*	
119	x			x	x			E/10 $\frac{1}{2}$ -E	8	x		$\frac{3}{4}$	
120	x			x	x			1-5(R)/0-4 Rev.	5	x		$\frac{3}{4}$	slight frosting
121		x		x	x			0-3(R)/0-2 $\frac{1}{2}$ Rev.	7	x		$\frac{1}{4}$	
122	x			x	x			9-E/4-E	5	x		$\frac{3}{4}$	
123		x		x	x			0/0	10	x		$\frac{3}{8}$	
125		x		x	x			0/0	7	x		$\frac{3}{8}$	
126		x		x	x			8 $\frac{1}{2}$ -11 $\frac{1}{4}$ /7 $\frac{3}{4}$ -11 $\frac{1}{4}$	6	x		$\frac{1}{2}$	
127		x		x	x			E/7 $\frac{1}{4}$ -E	3-7	x		1 $\frac{1}{32}$	
128		x		x	x			0/0	8	x		$\frac{1}{4}$	
129	x			x	x			E/E	7	x		$\frac{3}{4}$	
130	x		x		x			0/0-2 $\frac{1}{4}$	3-5	x		$\frac{1}{2}$	
135		x		x	x			5-14 $\frac{1}{4}$ /3 $\frac{1}{4}$ -14 $\frac{1}{4}$	8	x		$\frac{7}{32}$	projecting center ring (O. D. $\frac{1}{2}$ ") outer face slight frosting; sides painted grey
136		x		x	x			0/0	8	x		1 $\frac{1}{32}$	
138		x		x	x			0/0	8	x		$\frac{1}{4}$	
140		x		x	x			0/0	12	x		$\frac{3}{16}$	
141		x		x	x			0/0	10	x		$\frac{3}{16}$	
142		x		x			x	(-)-6/(-)-6 $\frac{1}{4}$ -(-)-4 $\frac{1}{4}$	3	x		*	
143		x	x		x			13-E/5-E	5-8	x		$\frac{1}{4}$	
144		x		x	x			1 $\frac{1}{2}$ -2/1 $\frac{1}{2}$ -2	8	x		$\frac{1}{4}$	
145		x		x	None			2 $\frac{1}{2}$ -8/6 $\frac{1}{4}$ E	*	x		*	
146		x		x	x			0/0	8	x		$\frac{1}{4}$	
147		x		x	x			E/5 $\frac{1}{4}$ -E	5-6	x		$\frac{1}{4}$	only unpatterned areas heavily embossed
149		x		x	x			11-E/8-E	3	x		1	
150		x		x	x			5 $\frac{1}{2}$ -6 $\frac{3}{4}$ /5 $\frac{1}{2}$ -7 $\frac{1}{4}$	10-14	x		$\frac{9}{16}$	
151		x		x			x	nm(R)/0; 0/3 $\frac{3}{4}$ -5 $\frac{3}{4}$ (R)	*	x	x	*	
153	x			x	x			E/E	3-4	1		$\frac{9}{16}$	

Chart IIA—CONCLUDED

Lens No.	Material		Striations		Design			N/D Expression	Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	Remarks
	Glass	Plastic	Present	Absent	Circular	Lenticular	Rectilinear			Present	Absent		
155	x		x	x	x			E/11½-E	1-2	2		1½/2	some parts slightly frosted
156	x		x	x	x			E/E	4	1		1½	
157	x		x	x	x			13-E/5-E	3		x	1½/6	
158	x		x	x			x	E/E	6		x	*	
159	x		x				x	0/0-2¾; np	*	x	x	*	
161	x		x	x				12¼-E/4¾-E	3-4		x	¾	unpatterned areas also embossed
162	x		x	x	x			E/12¼-E	2-3		x	½	
						x		4¾-5¼/5-12¼	2-3		x	*	
163	x		x				x	4/3¾-4½	2-4		x	*	
164	x		x				x	0-2/0-9; 0-9/nm	*		x	*	
165	x		x				x	0-2/0-10; 7-9¾/nm	*		x	*	
						x		1½-2/3¾-4½	3-4 #		x	*	
167	x		x	x	x			0/0	8		x	¼	
170	x		x	x				E/E	5		x	⅜	
171	x		x	x	x			E/7-E	2		x	1½/6	
172	x		x				x	0-2/nm; 3-3½/3¾-4¼	*	x	x	*	slight frosting
						x		1-4/1¾-5½	3		x	*	
173	x		x	x			x	2-3/nm	4-5 #		x	*	
						x		3¼-3½/nm; 2¼/nm	*	x	x	*	
						x		1-4/2-6¾	8		x	*	
174	x		x				x	nm(R)/0-10; 0-1¼/11½-15+(R)	*	x	x	*	
						x		0-13/0(R)	10		x	*	
175	x		x				x	0-6½/0-3¼; 0/6½-7	*	x	x	*	
						x		0-3¾/1½-7¼	1-2		x	*	
176	x		x	x				0/12½(R) Rev.	4		x	⅜	
						x		9½-14(R)/0	20-21		x	*	horizontal embossed band
177	x		x	x				6½/6½	9-10		x	⅜	
178	x		x	x				E/8-E	3-4		x	¾	
						x		8¼-8¾/13½-E	14		x	*	
179	x		x	x				E/11½-E	4		x	¾	
181	x		x				x	0-1½/4-5	5	1		⅝	embossings in circular center embossings faint
182	x		x	x				9½/9½	4-6	4		½	

Ridge count extrapolated.

* Not applicable.

nm Not measurable.

(R) Ridge.

(-) Negative lens.

np Not present.

¹ Unpatterned area.

E Extreme.

Rev. Reversible.

tion of embossings for each kind of molded design follows:

Circular: The presence of embossings is indicated by a number identifying the number of zones bearing such embossings; embossed zones are always centrally located on the lens.

Lenticular: An x under both present and

absent columns indicates that some but not all of such designs bear embossings.

Rectilinear: The considerations as described under lenticular designs are to be applied.

A few lenses were found to bear embossings which were not within one of the basic designs. Lenses to which this situation applied are identified

Chart IIB
CLASS FEATURES OF LENSES HAVING MOLDINGS ON TWO SIDES

Lens No.	Material		Outer Surface Moldings			Inner Surface Moldings									Remarks
			Class Numeral	Class Measurement (inches)		Striations		Design			Zone or Ridge Count	Embossings		Diameter of Center Zone (inches)	
	Glass	Plastic		Crest	Trough	Present	Absent	Circular	Lenticular	Rectilinear		Present	Absent		
23		x	I	$\frac{3}{32}$	$1\frac{1}{32}$		x		x		*	x	*	swept side curvature	
28		x	I	$\frac{3}{32}$	$1\frac{1}{16}$		x	x		x	9	x	*	swept side curvature	
32	x		II	*	$\frac{1}{4}$		x	x			10-11	x	*		
41	x		II	*	$\frac{1}{4}$		x	x			10-11	x	*		
42		x	IV	$\frac{1}{8}$	$20-2\frac{3}{32}$		x		x	x	2-5	x	$\frac{7}{8}$	outer face has vertical slot $1\frac{1}{32}$ " wide	
66	x		I	$\frac{5}{32}$	$\frac{1}{2}$		x	x		x	3	x	*	tips of rectilinear feature tapered; resembles lenticular feature	
74		x	I	$1\frac{1}{32}$	$\frac{3}{32}$		x	x		x	*	x	*	swept side curvature	
75	x		I	$\frac{5}{32}$	$\frac{3}{32}$		x	x			8	x	*		
76	x		VI	$\frac{3}{16}$	$\frac{1}{8}$		x	x			6-8	x	$\frac{7}{32}$		
92		x	II	*	$\frac{5}{32}$		x			x	13	x	*		
98		x	II	*	$\frac{1}{8}$		x	x			4-8	2-5	$1\frac{7}{32}$	embossing very faint; some parts frosted	
116	x		V	$\frac{3}{32}$	$\frac{7}{16}$		x			x	5-9	x	$\frac{1}{4}$	slightly frosted	
124	x		I	$\frac{1}{16}$	$\frac{1}{4}$		x	x			3-8	5	$\frac{1}{4}$	sides painted grey	
131	x		II	*	$\frac{1}{4}$		x	x			6-9	x	*	center band across face, $\frac{1}{4}$ " in width	
132	x		II	*	$\frac{1}{4}$		x	x			x				
133		x	II	*	$\frac{1}{4}$		x	x			9-10	x	$\frac{3}{16}$		
134		x	I	$\frac{1}{8}$	$2\frac{7}{32}$		x	x			2-3	x	*	grid pattern on inner face	
137		x	IV	*	$6-2\frac{1}{32}$		x	x			9-10	x	$\frac{1}{4}$		
139		x	II	*	$\frac{3}{16}$		x	x			4	x	$\frac{1}{2}$		
148		x	I	$\frac{1}{2}$ & $\frac{5}{8}$	$\frac{1}{8}$		x		x		3-5	x	$1\frac{1}{16}$		
152	x		I	$\frac{3}{16}$	$\frac{5}{32}$		x	x		x	9	x	$\frac{9}{16}$		
154		x	I	$1\frac{3}{32}$	$\frac{1}{8}$		x		x		10	x	$\frac{5}{32}$		
160	x		III	$\frac{1}{4}$	*		x		x		12	x	$\frac{3}{4}$	grid pattern on outer face	
166		x	V	$\frac{1}{8}$	*		x	x			*	x	*		
168		x	I	$\frac{7}{32}$	$\frac{5}{16}$		x		x		7-8	x	*	unpatterned areas embossed	
169		x	I	$\frac{1}{4}$	$2\frac{5}{32}$		x		x		*	x	*	reflective horizontal center bar	
180		x	I	$\frac{7}{32}$	*		x	x		x	*	x	*	unpatterned areas embossed	
										x	7-8	x	*	slightly frosted; swept side curvature	
										x	6-8	x	$\frac{3}{4}$		
										x	31	x	*		

* Not applicable.

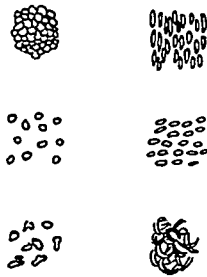


FIG. 26-31

under the column heading "Remarks" with the phrase "unpatterned areas embossed".

Diameter of Central Zone. This feature is applicable only to lenses having curvilinear molded designs the centermost zone of which is a clearly defined circle. When present in its entirety this measurement is easily determinable to $\pm \frac{1}{32}$ " with the aid of dividers and scale. If the fragment includes only a portion of the center zone a geometrical construction can be used to approximate the diameter.

The worker's attention is called to possible situations involving fragments bearing rounded lenticular designs, and to which this measurement is not applied. These can be confused with true centermost circles, and are to be differentiated by the presence or absence of straight walls defining zone limits. A straight walled central zone as depicted in horizontal section by Figure 32 properly falls under this class feature. Walls which slope away from the central area as shown by Figure 33 are representative of designs such as Figure 10, and are not to be measured.

Outer Surface Moldings (for use with Chart IIB only). The usage of the columns falling under this main heading is best understood by referring to Figures 34-40, which identify through line drawings (seen as horizontal or profile sections) the various kinds of outer surface designs which were represented. Each kind of design was assigned an identifying Roman numeral for entry under the column heading "Class Numeral". A further breakdown of each main class was effected through a measurement of C (Crest) and T (Trough), and entered under the appropriate column(s) as applicable.



FIG. 32 FIG. 33

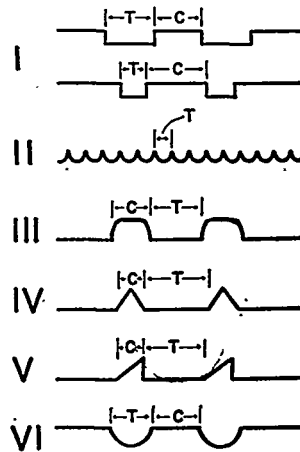


FIG. 34-40

Remarks. This column spacing is used for those lenses which had some degree of individuality, or to which special considerations were applied.

SUMMARY

The scheme described provides a systematic method for the identification of automobile front parking and turn signal lenses to be found on cars of American manufacture for the period of 1950-1959. It is designed for criminalistics use and requires only a fragment approximately the size of a 25¢ piece for development of useful information. The scheme makes unnecessary the gathering and maintenance of a complete lens collection. Aside from its practical usefulness it is believed that the workings of the scheme is illustrative of an approach to criminalistics identification which can be applied to other kinds of physical evidence.

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