

'STAR & INDIA GOVT.' WATERMARK (W3 AND W4) AND INDIGENOUS PAPER

An In-Depth Study of The Structure of The Watermark and The Associated Errors and Varieties

—by Late Dr. S. P. Gupta

The indigenous paper, first introduced in 1967 for printing postage stamps, carried an entirely new watermark 'Large Star & India Govt.' in sheets. The quality of paper, the intricate design of this watermark and often poor impression on the paper, all contributed to the difficulties in the study of this watermark. However, the dedicated studies by Narayan Kumar Routray of Berhampur (Orissa), Reba Biswas of Kharagpur and Dr. S. P. Gupta of Meerut have helped to unravel the intricacies of the complicated structure of this watermark. It surely was a philatelic challenge.

This watermark has an intricate pattern made up of two elements - WORDS and STARS. The unit of this watermark consists of two LARGE SQUARES, each measuring approximately 91 x 91 mms, arranged in overlapping continuity to form the sheet watermark termed as OVERALL MULTIPLE WATERMARK. These large squares are bordered by words 'GOVT OF INDIA' or 'INDIA GOVT' arranged on two contiguous sides in clockwise direction and the other two sides in anti-clockwise direction. The large square is divided into four SMALL SQUARES by words 'INDIA GOVT' or 'GOVT OF INDIA' arranged as in large squares, each small square enclosing a STAR in multi-directional pattern (W3) or fixed in one direction (W4).

The words and stars are arranged in a set pattern in the squares and are repeated throughout the sheet resulting in the constant feature "All stars pointing in same direction have the same pattern of words around each of them" (N. K. ROUSTRAY). This truism is amply demonstrated in watermark tracings in the following pages.

TWO TYPES OF 'LARGE sTAR & iNDIA gOVT.' WATERMARK -W3 AND W4

The arrangement of STARS in the squares formed by words differentiates the two types of this watermark viz. W 3 and W 4. In W 3 watermark the words are arranged in upright, inverted and right reading or reverse reading position with multidirectional arrangement of STARS in the squares. In November 1979, a modification of W3 watermark appeared in the sheets where arrangement of WORDS remained the same but all STARS were fixed pointing in one direction (W4).

METHODOLOGY

The thick and coarse indigenous paper and difficulty in reading the structure of the embossed watermark from printed sheets was a great obstacle in the study of this watermark. Following methodology was evolved for better visualization of the watermark and recording it for study, research and display :-

1. Direct tracing of the watermark from printed sheets.
2. Sheet illuminated from back to visualize the watermark and photographed to record it.
3. Bromide paper contact print to visualize the watermark.

LARGE STAR & INDIA GOVT. (W 3) WATERMARK

The indigenous paper embossed with Large Star & India Govt. (W3) watermark was first introduced to print Official stamps on 15 April 1967, when 2p, 3p, 5p, 6p, 10p, 15p, 20p, 30p and 50p were printed on this thick and coarse Titaghur paper on an experimental basis. As the quality of this paper improved low value denominations of Definitive stamps e.g. 2p (Bidriware) of IV Definitive Series began to be used for printing in March 1975.

W3 watermark is instantly recognized by multi-directional arrangement of stars in small squares. Each large square is divided into four small squares enclosing a star and the *relationship of words and stars in these stars in these squares is constant and is read in all four squares as seen from the point of stars.* (Fig.1)

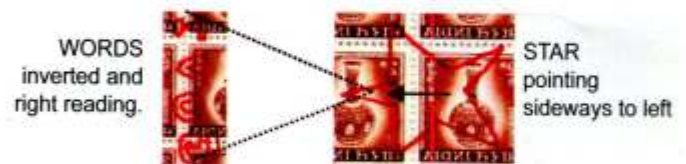


Fig.1

ORIENTATION OF WORD 'GOVT.' AS SEEN FROM THE POINT OF STAR. THE WORD IS INVERTED AND RIGHT READING. THIS OFTEN IS THE CAUSE OF CONFUSION AND SHOULD BE READ AS SHOWN ABOVE.

The two elements in the structure of this watermark change when the sheet is viewed from front face or gum side and rotated 180°. *There is a constant feature about W3 watermark that in any sheet a particular star pointing in a*

particular direction has always the same pattern of words around it in same orientation. (Fig.2 & 3.)

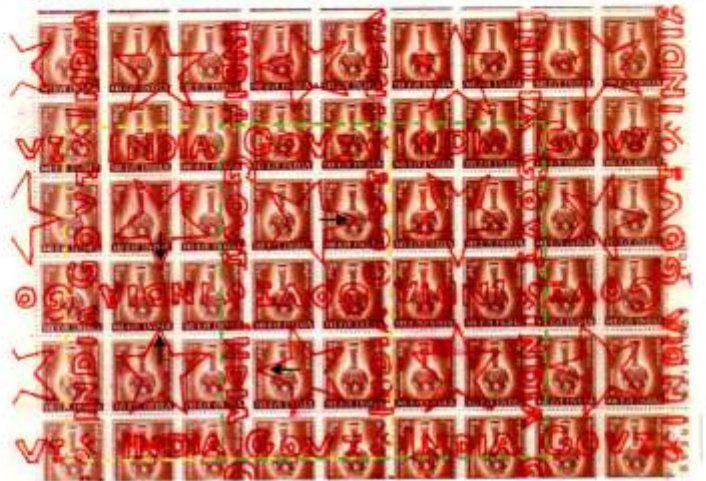
TRACING OF W3 WATERMARK FROM 5p OFFICIAL STAMP SHEET



ACTUAL TRACING OF W3 WATERMARK FROM 5p OFFICIAL STAMP SHEET ISSUED ON 14 NOVEMBER 1967, THE VERY FIRST PRINTINGS ON W3 WATERMARKED INDIGENOUS PAPER. SIZE OF LARGE SQUARE 95x95 MM, DIVIDED INTO FOUR SMALL SQUARES, EACH SQUARE ENCLOSING AN AREA OF 32 MM AND BEARING A STAR OF 26 MM SIZE. THE THICKNESS AND COARSENESS OF PAPER IS OBVIOUS FROM THE ABOVE PHOTOGRAPH. (SIZE REDUCED)

Fig.2

TRACING OF W3 WATERMARK FROM 2p BIDRIWARE STAMP SHEET



ACTUAL TRACING OF W3 WATERMARK FROM 2p BIDRIWARE SHEET, ISSUED IN March 1975, SHOWING OVERLAPPING CONTINUITY OF SQUARES 1 AND 2 AND ARRANGEMENT OF WORDS AND STARS IN SMALL SQUARES. ALSO NOTE THE CONSTANT RELATIONSHIP OF WORDS AND STARS AS READ FROM THE POINT OF STARS. IMPROVEMENT IN THE QUALITY OF PAPER IS OBVIOUS. (Size reduced)

Fig.3

The following chart depicts changes in the watermark when sheets are fed in different positions in the printing press by accident or design (Fig.4,5,6) :-

Star & India Govt. (W3) watermark as seen from the FRONT (PRINTING) SIDE of sheet and when rotated 180° in clockwise direction:-

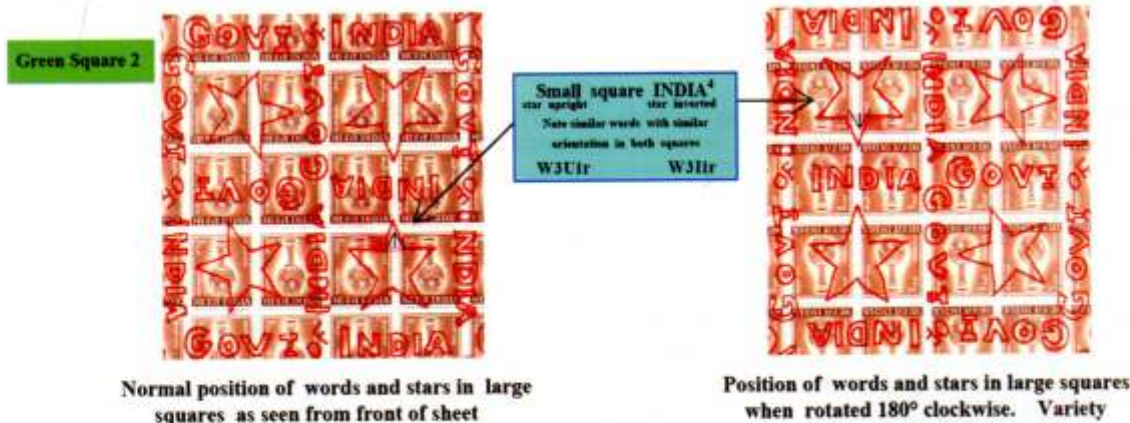


Fig.4

Star & India Govt. (W3) watermark sheet flipped horizontally when GUM SIDE became printed front face of the sheet and when rotated 180° in clockwise direction :-

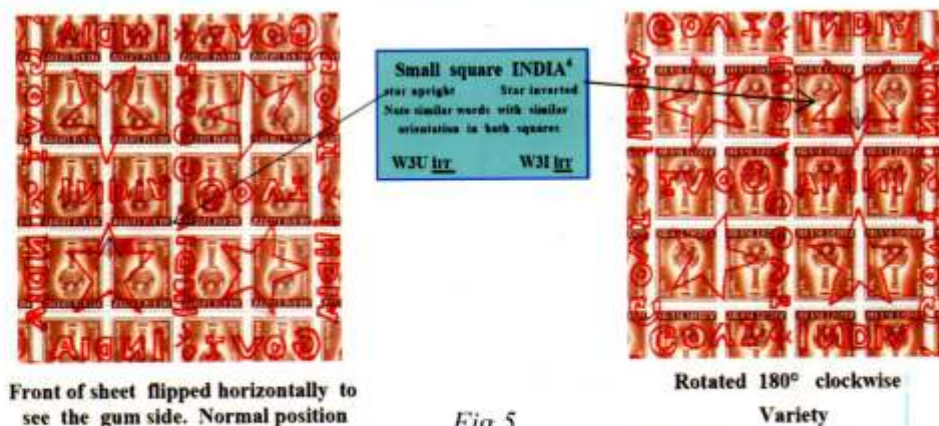


Fig.5

Star & India Govt. (W3) watermark sheet *flipped vertically when GUM SIDE became printed front face of the sheet and when rotated 180° in clockwise direction :-*

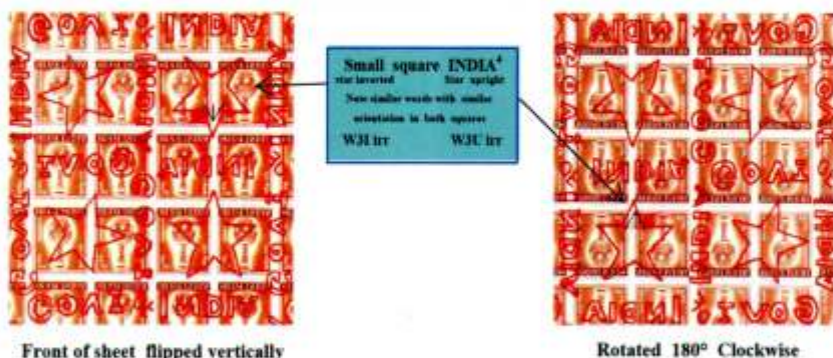


Fig.6

The position of stars and their relationship with words will require description in words which will be lengthy and unwieldy. An abbreviated form has been developed which will accurately describe the positional varieties as follows :-

ABBREVIATIONS: W- watermark, 3- wmk 3, 4- wmk 4, U- star upright, SL- star sideways to left, SR- star sideways to right, I- star inverted (All Star abbreviations in capital letters); i- word inverted, u- word upright, r- words reversed reading, rr- words right reading (all abbreviations used for words in lower case).

MODIFIED LARGE STAR & INDIA GOVT' (W 4) WATERMARK

On 26th November 1979 a modification of W3 watermark appeared in the sheets of 5p Fish where all stars were fixed in one direction (W4) (instead of rotating as seen in W3 watermark) with similar pattern and orientation of

words. All Definitive stamp printings depict star placed in sideways to right or left position and words in upright and reversed reading or inverted and right reading position. The watermark tracing from 5p Fish sheet depicts the normal position of this watermark in these printings. Besides Definitive stamps many commemoratives of 1980-81 and official stamps of 1980 to 1982 period were also printed on W 4 watermarked paper.

NOTE THE ORIENTATION OF WORDS AROUND EACH SMALL SQUARE WITH ALL STARS POINTING IN ONE DIRECTION IN W4 WATERMARK

All stars in small squares pointing in one direction have different pattern and orientation of words around each of them and this arrangement is repeated throughout the sheet. (Fig.7)

TRACING OF W 4 WATERMARK FROM 5p FISH DEFINITIVE STAMP SHEET SHOWING STAR SIDWAYS TO RIGHT. WATERMARK WITH STARS SIDWAYS TO LEFT ARE ALSO KNOWN.

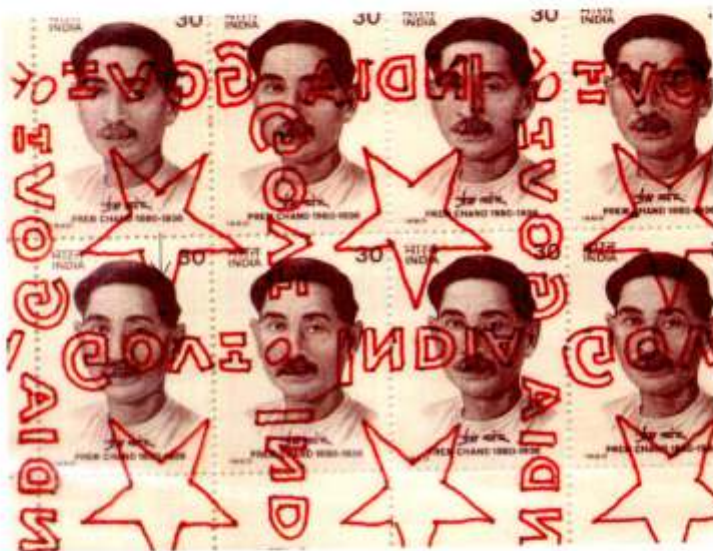


ACTUAL TRACING OF W4 WATERMARK FROM FRONT FACE OF 5p FISH SHEET SHOWING OVERLAPPING CONTINUITY OF LARGE SQUARES 1 AND 2 AND ALL STARS POINTING IN ONE DIRECTION TO RIGHT WITH DIFFERING ARRANGEMENT OF WORDS IN FOUR SMALL SQUARES. (size reduced)

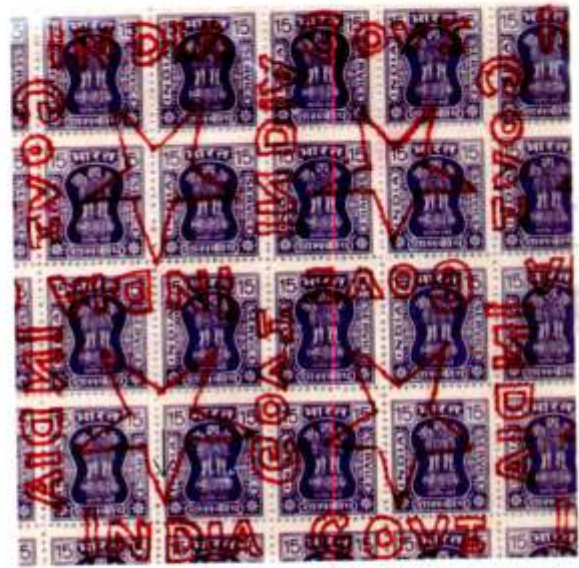
Fig.7

The watermark W4 with stars in upright or inverted positions are not known in printings of Definitive stamps and are only found in Commemorative stamps issued from 25th January 1980 to February 1981 and the printings of Official stamps after 1980 as depicted here. (Fig. 8):

ACTUAL TRACING OF W 4 WATERMARK FROM 30p PREMCHAND COMMEMORATIVE STAMP SHEET AND 15p OFFICIAL STAMP SHEETS, BOTH WITH INVERTED STAR, ARE SHOWN BELOW. THESE PRINTINGS ARE ALSO KNOWN WITH STARS TO LEFT.



30p Prem Chand (1980) commemorative stamp depicting inverted star (I) and words inverted and right reading (Irr). (size reduced)



15p Official stamp with Watermark W4 depicting star inverted (I) and words upright and right reading (urr). (size reduced)
Size of large square : 98x98 mm

Fig.8

ERRORS AND VARIETIES OF W 3 AND W 4 WATERMARKS

Two types of errors and varieties are known to occur in these watermarks :-

1. Positional varieties of Watermark :
 - a. W 3 watermark
 - b. W 4 watermark
2. Dandy Roll errors and varieties

POSITIONAL VARIETIES OF WATERMARKS

Positional varieties of watermark originate in two ways : in the course of manufacture of paper or while the stamps are being printed. The paper is manufactured in the form of stack of sheets or as reels. Keeping the position of watermark constant while embossing on the wet paper and stacking the finished product in the form of sheets or paper reels, is the responsibility of paper manufacturer. Stacks of paper are carefully handled at printing press. Any change in the face or direction of sheets causes change in the direction of watermark. Accidentally gum side of sheet may be fed for printing in the press. The paper reels are manufactured and gummed at the

POSITION OF STAR	POSITIONAL VARIETIES OF W3 WATERMARK			
	NORMAL Upright & right reading	INVERTED inverted & right reading	REVERSED upright & reverse reading	INVERTED & REVERSED inverted & reverse reading
UPRIGHT (U) 	 W3Uurr	 W3Uirr	 W3Uur	 W3Uir
INVERTED (I) 	 W3Iurr	 W3Iirr	 W3Iur	 W3Iir
SIDEWAYS TO LEFT (SL) 	 W3SLir	 W3SLirr	 W3SLirr	 W3SLir
SIDEWAYS TO RIGHT (SR) 	 W3SRir	 W3SRirr	 W3SRirr	 W3SRir

Fig.9

paper mill and are used by the printer as they come. Printer, therefore, has no choice or option to keep the position of watermark constant and so varieties are produced. This is the story of the genesis of positional varieties of watermark.

1a. POSITIONAL VARIETIES OF W 3 WATERMARK

The two elements in the structure of the watermark produce following types of positional varieties :-

- A. Watermark inverted.
- B. Watermark reversed.
- C. Watermark inverted and reversed.

The chart (Fig.8), depicts the change in the orientation of words in different positions of Star.

Reba Biswas of Kharagpur has keenly studied the 'Large Star & India Govt.' watermark and has devised the following chart for easy identification of the positional varieties of W 3 watermark.

1b. POSITIONAL VARIETIES OF W 4 WATERMARK

Stars in W4 watermark are fixed in one direction. Note that each small square with same direction of star depicts different pattern of words in a definite orientation. When face of the sheet changes, the direction of stars in the squares changes carrying same pattern and orientation of words.

As it happens, when the printing side becomes gum side and gum side the printing side, orientation of stars and words is similar to 'Face 2'. An example of such change is shown below in the 5p Fish printings.

CHANGES IN W 4 WATERMARK WHEN SHEETS ARE FED IN DIFFERENT POSITIONS IN THE PRINTING PRESS.

Note the direction of stars changes in small squares with same pattern and orientation of words. This is clearly depicted in the images of small squares shown in Fig. 10.

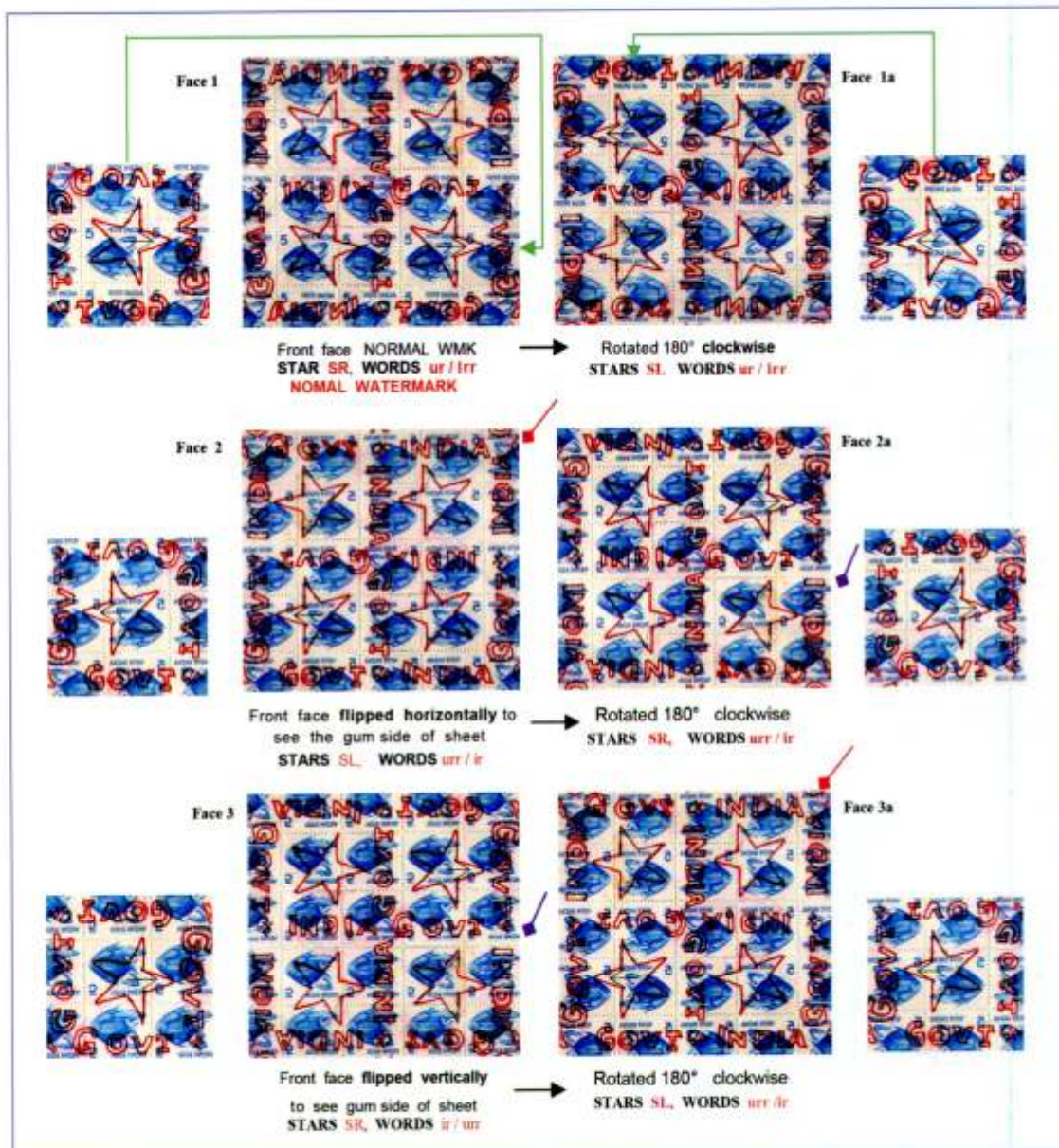


Fig.10+

EXAMPLES OF POSITIONAL VARIETIES OF WATERMARK

A photographic image showing W4 watermark from a 2 p Adult Education Stamp sheet printed by litho (Fig.11).

The examination and review of many sheets of this watermark shows another feature - the difference in the direction of stars with same pattern and orientation of words. The variety below has been produced by horizontally flipping and rotating 180 0 or vertically flipping the front face of the sheet as seen in the images on last page and marked with arrow. The image (Fig.12) depicts the positional variety of this watermark as per explanation on last page.

2. DANDY ROLL ERRORS AND VARIETIES OF W 3 AND W 4 WATERMARKS

These varieties of watermark are so named because they

are produced due to damage and / or repair to dandy roll and are found in the printings of many denominations on W3 and W4 watermarked papers. At a certain stage of usage the dandy roll sustained damage due to bits falling off, broken or deformed or simply was worn out, embossing poor impression on the paper. The two element complicated pattern of this watermark hindered the early detection and when detected were difficult to repair as many types of bits were needed. As a consequence many types of interesting varieties such as broken, missing and deformed letters and stars were produced. *Instances of repair of dandy roll have also been found where repair was wrongly done result- ing in the change of pattern of stars in the repaired area of dandy roll.* The complicated design of the watermark and difficulty in proper maintenance of the dandy rolls was the main problem. This watermark was, therefore, discarded in favour of simpler single ELEMENT Multiple Asokan Capital watermark.



Fig.11



Fig.12

Following types of errors and varieties have been found in sheets during study of these watermarks :

1. Broken or missing letters and words.
2. Broken, deformed or missing stars.
3. Classic error of 'Stamp without watermark' due to missing star.
4. Faulty repair of missing stars resulting in change of pattern of stars in the watermark in the repaired area.

Varieties and errors enumerated above of broken, deformed or missing letters and stars and faulty repair to dandy roll will rank equally with the so far best known varieties of watermark, notably the St. Edward crown among the Tudor crowns on many Commonwealth stamps and G. B. Wilding definitive issues of 1952-53 era with inverted or missing crown in the Multiple Crowns watermark.

Dandy Roll Varieties

(Photographed against light to visualize watermark)

2. Deformed and broken Stars

Deformed Star - Original block photographed against light (1). Contact print on bromide paper of 2(p) Bidriware stamp block (2). Both showing deformed star.

Broken star - 2 (p) BIDRIVASE STAMP - 1. Original block photographed against light. 2. Contact prints made on Bromide paper and retouched. Both showing broken star.

Contd. on next page

Fig.13



Fig.14

3. CLASSIC ERROR OF 'STAMP WITHOUT WATERMARK'

This type of error is likely to be found in watermarks with a network type of pattern formed by one or two elements and covering the whole sheet (All Over Watermark). The 'Large Star & India Govt.' watermark fills the bill admirably and is a perfect example for the genesis of such errors. As already described, this watermark has an intricate pattern made up of two elements - WORDS and STARS. The basic unit of this watermark consists of two large squares (overlapping each other), size varying between 89x98 mms to 101x90 mm in different printings, bordered by words 'Govt. of India or India Govt.' and divided in to four small squares - each square enclosing 30-32 mm of space occupied by a star of 26 mms size. The usual size of a low denomination Definitive stamp is approximately 22x20 mms. Thus it is apparent that any damage to dandy roll particularly the MISSING STAR will reflect in the

embossed sheet as a vacant area without watermark. A stamp fortuitously printed in that area will produce the classic error of a 'STAMP WITHOUT WATERMARK'.

The stamps without watermark have been reported in many modern G.B. stamps due to misplacement of paper during printing (James Watson). Here, however, the case is entirely different. The No Watermark Stamps are the direct result of damaged dandy roll embossing the watermark with broken or fallen bits of Words, particularly the MISSING STAR leaving areas of paper with no impression of watermark at all. As already stated above, these areas were large enough to accommodate small size definitive stamps and a stamp fortuitously printed in that area became the STAMP WITHOUT WATERMARK. These are CLASSIC because such stamps are typical and rare and are without watermark in a watermarked sheet.

The next two pages depict three examples of stamps without watermark :-

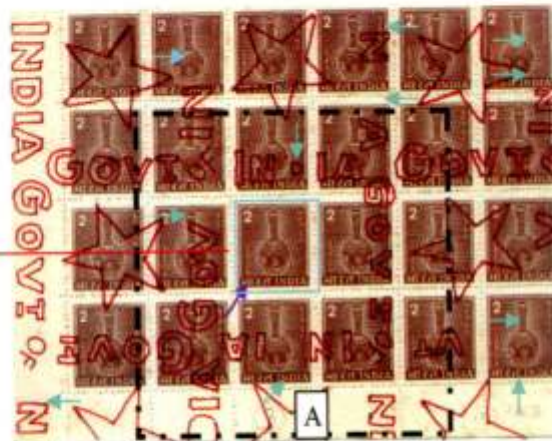
CLASSIC ERROR OF 'STAMPS WITHOUT WATERMARK' - 1

DETAILED STUDY OF WATERMARK WITH MISSING STAR FROM PRINTED SHEET OF 2p BIDRIWARE (printed by Litho) OF V DEFINITIVE SERIES BY ACTUAL TRACING (A), PHOTOGRAPHY (B) AND CONTACT PRINTING ON BROMIDE PAPER (C) :-

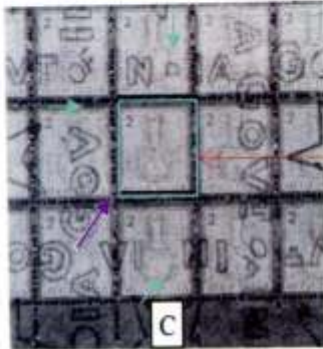
STAMP WITHOUT WATERMARK



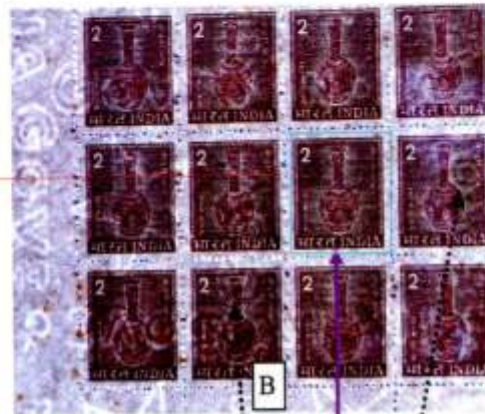
Enlarged view showing no watermark stamp due to missing star



A watermark tracing of 2p Bidrivase (LITHO) part-sheet, watermark W3 (A), showing missing star and stamp without watermark (→) and broken letters and words (←).



Bromide paper contact print (C) visualizing watermark shows missing star, stamp without watermark (→) and broken, missing letters and words (←). (Contact print retouched)



Photographic display of watermark error: Block photographed against light (B) to visualize the watermark. Size reduced

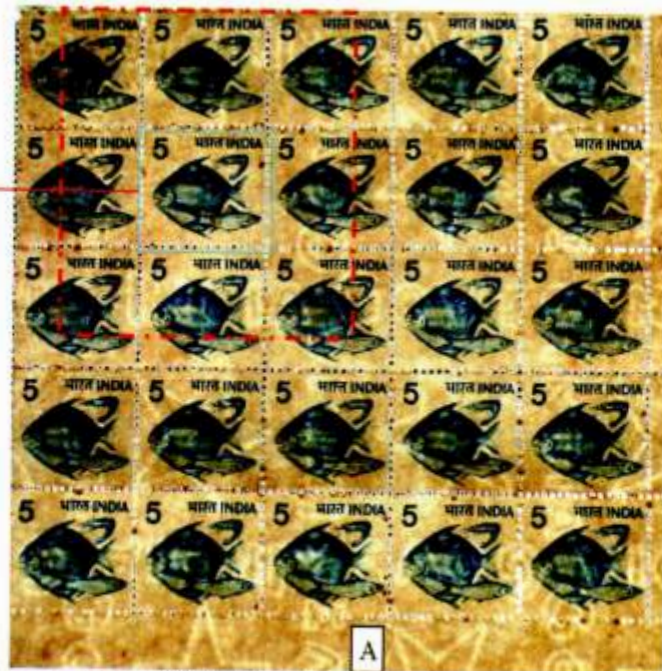


2p BIDRI WARE STAMP PRINTED IN PHOTOGRAVURE
Major portion of the 2p Bidriware stamp, printed in photogravure, is without watermark except lower marginal area where embossed words are only faintly visible.

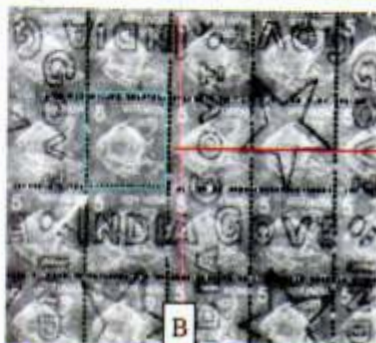
CLASSIC ERROR OF 'STAMPS WITHOUT WATERMARK' - 2



NO WATERMARK STAMP
Photographed against light. Enlarged view



643 h PART SHEET OF 5p FISH PHOTOGRAPHED AGAINST LIGHT TO VISUALIZE WATERMARK W3 (A) DEPICTING MAJOR WATERMARK ERROR



A. BROMIDE PAPER CONTACT PRINT (B) SHOWING STAMP WITHOUT WATERMARK. THE WORDS AND STARS HAVE BEEN RETOUCED. (Size reduced)



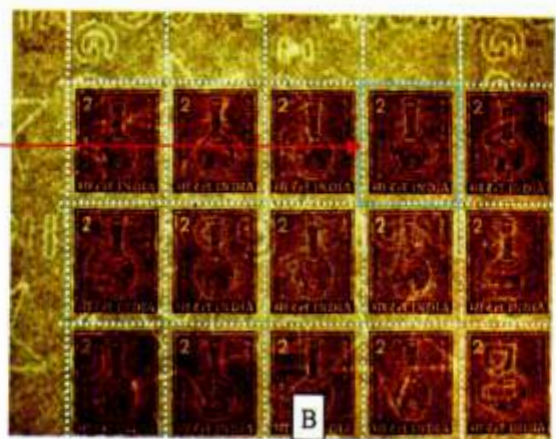
GRAPHIC OF W3 WATERMARK AS SEEN IN SPECIMEN ABOVE, DEPICTS MISSING STAR AND STAMP WITHOUT WATERMARK

CLASSIC ERROR OF STAMP WITHOUT WMK - 3



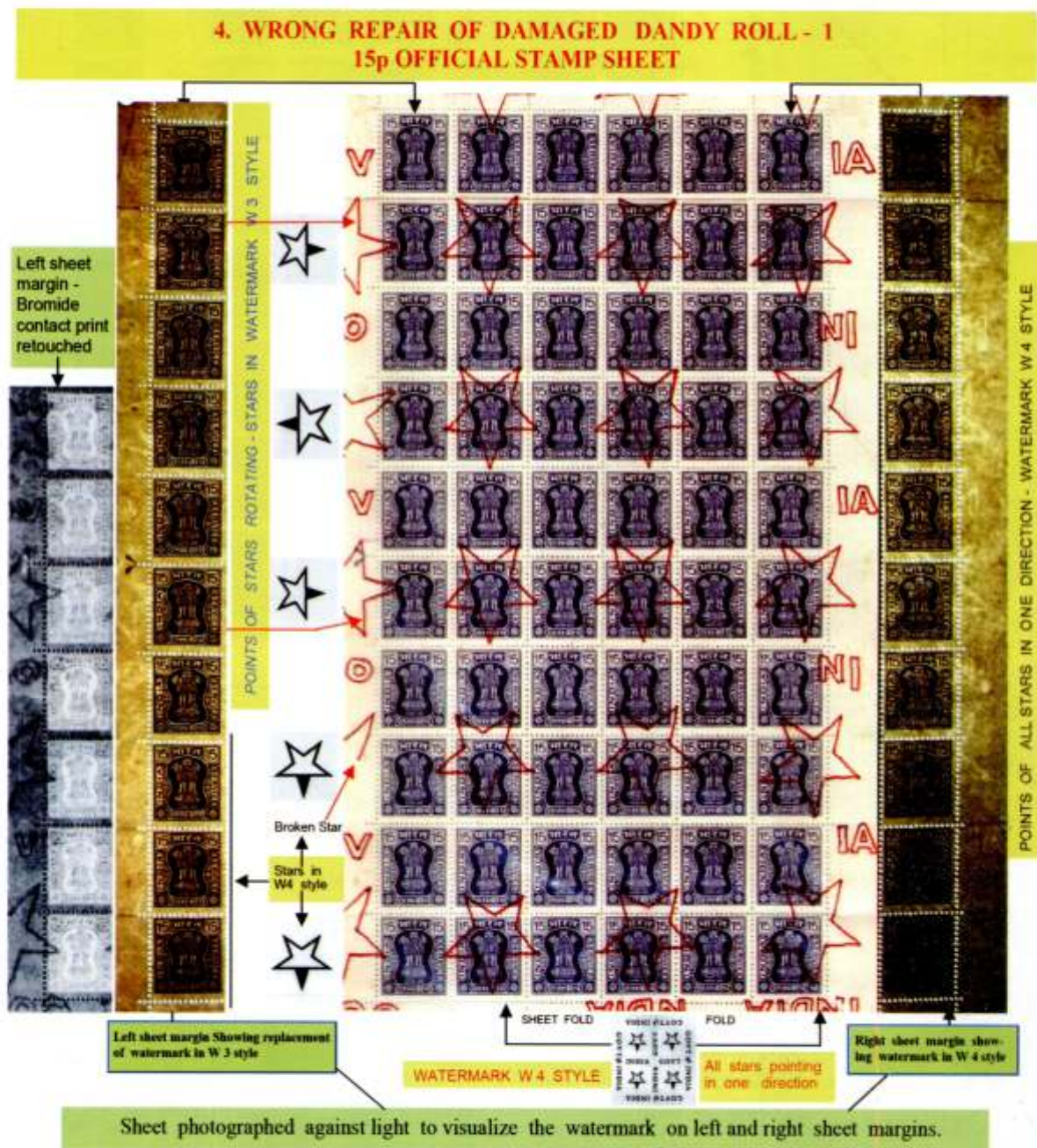
ENLARGED VIEW
STAMP WITHOUT WATERMARK

Blocks of 15 stamps of 2 (p) BIDRIWARE, shown below with tracing of watermark (on left) (A) and back lighted photograph (on right) (B) to bring out watermark, depicts **STAMP WITHOUT WATERMARK**. Examination of sheets of many denomination has revealed that the stamps without watermark have been found mostly in LITHO printings of this stamp on W3 watermarked paper.



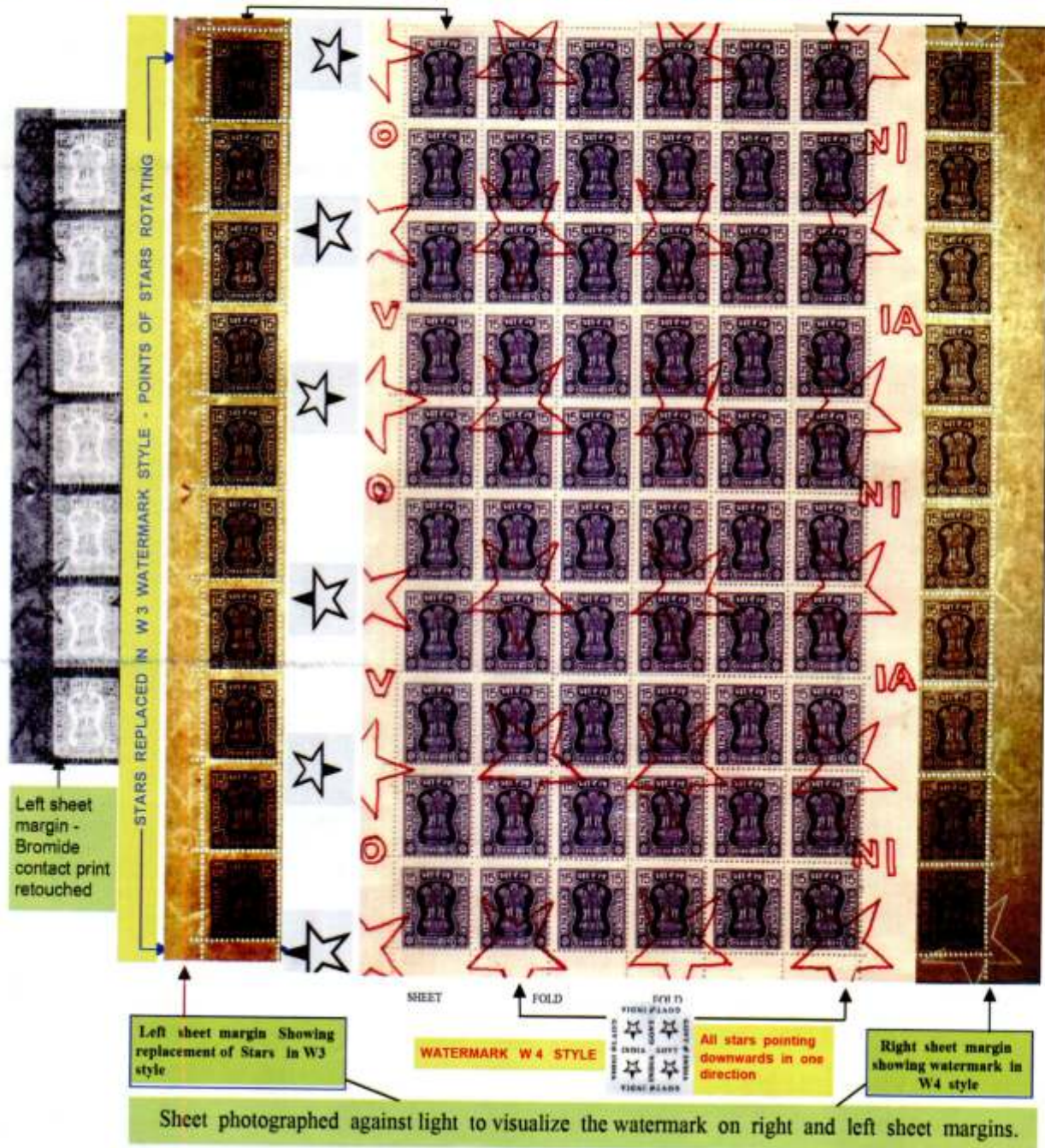
4. WRONG REPLACEMENT OF STARS IN W3 STYLE IN VACANT AREAS OF MISSING STARS IN A W4 WATERMARKED SHEET.

Very interesting instances of repaired areas of missing stars on the damaged dandy roll were found embossed on the paper in some printings. The words were small, therefore, their absence was inconsequential and were not replaced. The missing stars left a large area in small squares without watermark as described earlier. As the star bit was single, quite large in size and easy to handle, repairs mostly consisted of replacement of the missing stars. The complicated structure of the watermark was an important factor in the erroneous replacement of stars. Using visualizing techniques, a close study of the watermark was possible to detect these *wrong replacements of stars in W3 watermark style in a W4 watermarked sheet*. Two such examples of wrongly repaired watermark are depicted in 15p Official stamp sheets below and on next page.



15p SERVICE Sheet (folded) to show whole sheet including right and left sheet margins. Sheet margins usually show watermark impression better. Watermark tracing showing wrong replacement of stars in W3 style on left sheet margin. (normal pattern - W4 watermark (all stars pointing in one direction)). Bromide paper contact print on left also confirms replacement of stars in wrong direction.

4. WRONG REPAIR OF DAMAGED DANDY ROLL - 2



SECOND EXAMPLE :- Sheet folded to show whole sheet of 15p Service stamps including right and left sheet margins. Sheet margins usually show watermark impression better. Watermark tracing on 15p SERVICE stamp sheet showing wrong replacement of stars in W3 fashion on dandy roll, embossing W3 style (stars pointing in different directions) on left sheet margin. Remaining all stars are in W4 style. Bromide paper contact print on left also confirms wrong replacement of stars. (size of tracing reduced)

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Interesting varieties of 'GOVT OF INDIA' Wmk III', Hobby pp 4, 5, 6.

2. Reba Biswas (Kharagpur) - Study of Large Star & India Govt. Watermark. Personal communication (1984-1986).
3. Dr. S. P. Gupta (Meerut) - Specialized Hand Book of Modern Indian Stamps (1982) pp. 52, 53 and 54.
4. Dr. S. P. Gupta - First Supplement (1985) of above Hand book pp. 315 - 320.
5. James Watson - Stamp Varieties Explained (Stanley Gibbons) pp 29.