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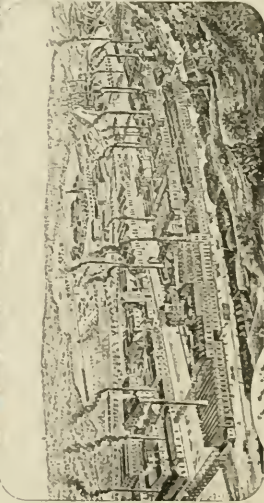
Farbenfabriken vorm. Friedr. Bayer & Co



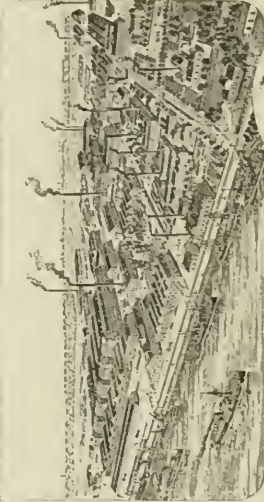
FABRIK IN ELLERSHOE



FABRIK IN MÜSSAU



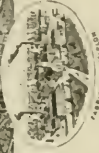
FABRIK IN ELBERFELD.



FABRIK IN LEVRUSEN / RHEIN



FABRIK IN BARTHEL



FABRIK IN BARTHEL

ELBERFELD.

THE
APPLICATION OF THE BENZIDINE COLOURS

IN
ALL BRANCHES OF PRINTING.

FARBENFABRIKEN
VORM.
FRIEDR. BAYER & CO., ELBERFELD.



Published by the
FARBENFABRIKEN vorm. FRIEDR. BAYER & CO., ELBERFELD.

1898.



Sole Representatives for Great Britain and Ireland:
The Elberfeld Farben Fabriken Company Limited

MANCHESTER, 20, Booth Street, Mosley Street.

BRADFORD, 48, Vicar Lane.

GLASGOW 42, Bothwell Street.

LONDON, 19, St. Dunstan's Hill E. C.

Preface.

Fifteen years have now elapsed since the Benzidine colours made their appearance in the market, and at that time no one imagined the important part they would play in improving many branches of textile manufacture.

Although at first their application was almost exclusively used in dyeing, it soon became apparent that they would make great headway for all requirements in printing.

The Benzidine colours are suitable for padding, they can also be discharged white and coloured, and with their assistance mercerised effects can be produced etc. They are used in many different ways for printing cotton, wool and silk goods, and indeed without their aid, modern printers would feel a great void.

In the accompanying pamphlet we present you merely with an illustrated collection of the chief applications of our important Benzidine dyestuffs, trusting it may always keep before you the advantages, the utility and the various applications of these colours.

Farbenfabriken vorm. Friedr. Bayer & Co.

Elberfeld, Summer 1898.

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Cotton printing.

Padding.

The following Benzidine colours are suitable for padding:

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B
Brilliant Geranine B, 3 B
Geranine G.

Orange Dyestuffs:

Benzo Orange R
Chloramine Orange G
Congo Orange G
Mikado Orange.

Yellow Dyestuffs:

Brilliant Yellow
Chloramine Yellow
Chrysamine G, R
Chrysofenine
Direct Yellow R
Mikado Yellow
Yellow PR
Thiazole Yellow.

Green Dyestuffs:

Benzo Dark Green
Benzo Green G, B B
Benzo Olive.

Blue Dyestuffs:

Benzo Blue 2 B, 3 B
Benzo Chrome Black Blue B
Benzo Cyanine B, 3 B, R
Benzo Sky Blue
Benzo Sky Blue 4 B
Benzo Black Blue G, 5 G
Brilliant Azurine B, 5 G
Brilliant Benzo Blue 6 B
Brilliant Sulphon Azurine R
Diazo Blue Black
Diazo Black B (undiazotised).

Violet Dyestuffs:

Benzo Violet R
Heliotrope B B.

Brown Dyestuffs:

Benzo Brown B X, G, N B X, 5 R, B R,
R extra
Benzo Chrome Brown B, G, R, 3 R, 5 G
Benzo Dark Brown
Chloramine Brown G
Congo Corinth G
Diazo Brown R extra
Direct Bronze Brown
Direct Fast Brown B, G G
Hessian Brown B, B B, M M
Toluylene Brown B, B B O, M, R.

Grey Dyestuffs:

Benzo Fast Black
Benzo Fast Grey
Benzo Grey S extra
Pluto Black B, G, R.

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The Benzidine colours are used to a great extent in **padding** or **finishing** light shades on Aniline Black patterns or for covering colour prints.

They are padded in the usual manner on the slop padding or finishing machine, whether they be padded with watery solution of Benzidine colour or slightly thickened with dextrine or mucilage of tragacanth or whether the solution of Benzidine dyestuffs be added to the particular quantity used for finishing.

No. 1.

1 oz. or 48 grms. **Benzo Brown BX**
 2 " " 100 " phosphate of soda
 12½ galls. " 100 litres water.

No. 2.

1 oz. or 50 grms. **Benzo Violet R**
 2 " " 100 " phosphate of soda
 12½ galls. " 100 litres water.

No. 3.

3¼ oz. or 65 grms. **Geranine G**
 5 " " 100 " phosphate of soda
 31¼ galls. " 100 litres water.

No. 4.

½ oz. or 25 grms. **Benzo Chrome**
Black Blue B
 2 " " 100 " phosphate of soda
 12½ galls. " 100 litres water.

No. 5.

3½ oz. or 70 grms. **Benzo Chrome**
Brown G
 5 " " 100 " phosphate of soda
 31¼ galls. " 100 litres water.

No. 6.

4¾ oz. or 303 grms. **Thiazole Yellow**
 2¾ " " 187 " **Brilliant Benzo**
Blue 6 B
 1½ " " 100 " phosphate of soda
 10 galls. " 100 litres water.

No. 7.

1 oz. or 50 grms. **Benzo Black Blue 5G**
 2 " " 100 " phosphate of soda
 12½ galls. " 100 litres water.

No. 8.

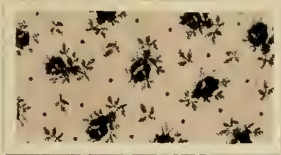
3¼ oz. or 65 grms. **Chloramine Yellow**
 5 " " 100 " phosphate of soda
 31¼ galls. " 100 litres water.

No. 9.

½ oz. or 24 grms. **Brilliant Benzo Blue 6B**
 2 " " 100 " phosphate of soda
 12½ galls. " 100 litres water.

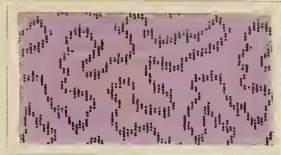
Cotton printing.
(Colours for padding).

1



Benzo Brown BX padded on Aniline Black.

2



Benzo Violet B padded on Aniline Black.

3



Geranine G padded on Aniline Black.

4



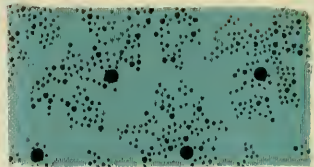
Benzo Chrome Black Blue B padded on Aliz. Red and Aniline Black.

5



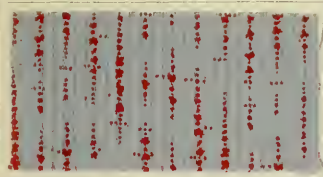
Benzo Chrome Brown G padded on Aniline Black.

6



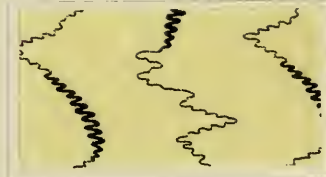
Brilliant Benzo Blue 6B and Thiazole Yellow padded on Aniline Black.

7



Benzo Black Blue 5G padded on Alizarine Red SX extra.

8



Chloramine Yellow padded on Aniline Black.

9



Brilliant Benzo Blue 6B padded on colour prints.

No. 10.

$\frac{1}{2}$ oz. or 24 grms. **Chloramine Orange G**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 12.

10 oz. or 500 grms. **Bril. Benzo Blue 6 B**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 14.

$\frac{1}{2}$ oz. or 37,5 grms. **Benzo Fast Black**
 1 $\frac{1}{2}$ " " 100 " phosphate of soda
 10 galls. " 100 litres water.

No. 16.

4 oz. or 200 grms. **Benzo Sky Blue**
 4 " " 200 " phosphate of soda
 12 $\frac{1}{4}$ galls. or 100 litres water.

No. 18.

5 oz. or 250 grms. **Chloramine Yellow**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 11.

1 oz. or 50 grms. **Benzo Green G**
 4 " " 200 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 13.

$\frac{1}{2}$ oz. or 25 grms. **Chrysamine G in powder.**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 15.

3 oz. or 180 grms. **Benzo Violet R**
 1 " " 60 " **Benzo Sky Blue**
 3 " " 200 " phosphate of soda
 10 galls. or 100 litres water.

No. 17.

10 oz. or 500 grms. **Geranine G**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 19.

$\frac{1}{2}$ oz. or 24 grms. **Benzo Cyanine B**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

Cotton printing.
(Colours for padding).

Table 2.

10



Chloramine Orange G padded on colour prints.

11



Benzo Green G padded on colour prints.

12



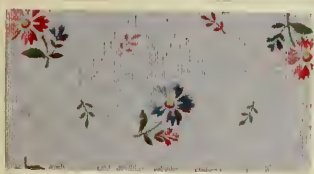
Aniline Black padded with Brilliant Benzo Blue G B.

13



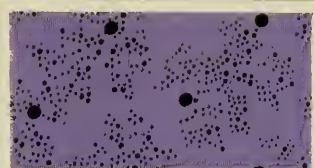
Chrysamine G padded on Alizarine Red and Aniline Black.

14



Benzo Fast Black padded on colour prints.

15



Benzo Violet R and Benzo Sky Blue padded on Aniline Black.

16



Aniline Black padded with Benzo Sky Blue.

17



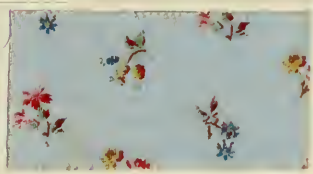
Aniline Black padded with Geranine G.

18



Aniline Black padded with Chloramine Yellow.

19



Benzo Cyanine B padded on colour prints.

The Benzidine dyestuffs are also used for stop padding goods printed with the modern ice-colours.

No. 20.

Ice Red (Paranitraniline) β -Naphтол

8 oz. or 400 grms. **Benzo Sky Blue**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 21.

Ice Blue (Dianisidine) β -Naphтол

5 oz. or 250 grms. **Chloramine Yellow**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 22.

Ice Blue (Dianisidine) β -Naphтол

8 oz. or 400 grms. **Geranine G**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 23.

Ice Bordeaux (α -Naphthylamine) β -Naphтол

8 oz. or 400 grms. **Benzo Sky Blue**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 24.

Ice Bordeaux (α -Naphthylamine) β -Naphтол

8 oz. or 400 grms. **Chloramine Yellow**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 25.

Ice Red (Paranitraniline) β -Naphтол

12 oz. or 600 grms. **Brilliant Geranine B**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 26.

Ice Black (Benzidine)

Developer E S

5 oz. or 250 grms. **Bril. Benzo Blue 6 B**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

No. 27.

Ice Bordeaux (α -Naphthylamine) β -Naphтол

4 oz. or 200 grms. **Benzo Green G**
 1 " " 50 " **Chrysophenine**
 2 " " 100 " phosphate of soda
 12 $\frac{1}{2}$ galls. or 100 litres water.

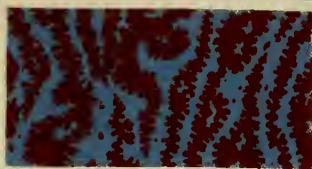
No. 28.

Many Benzidine Colours such as Benzo Nitrol Brown G, Benzo Nitrol Dark Brown N, Direct Fast Brown B, Direct Blue Black B, Pluto Black B etc. possess the property of combining with diazotised Paranitraniline and producing effective styles fast to washing.

Should the resulting product differ in shade from the original dye very fine two coloured effects can be obtained, such as are produced with Toluylene Orange G (Pattern 28). After diazotised Paranitraniline has been printed on, steam for 5 mins., and then soap, wash and dry.

Cotton printing.
(Slop-padded shades on Ice colours).

20



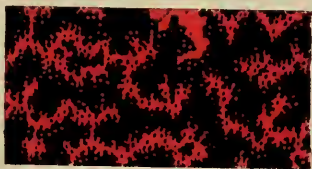
Ice Red padded with Benzo Sky Blue.

21



Ice Blue padded with Chloramine Yellow.

22



Ice Blue padded with Geranine G.

23



Ice Bordeaux padded with Benzo Sky Blue.

24



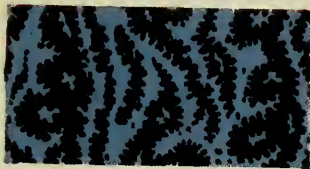
Ice Bordeaux padded with Chloramine Yellow.

25



Ice Red padded with Brilliant Geranine B.

26



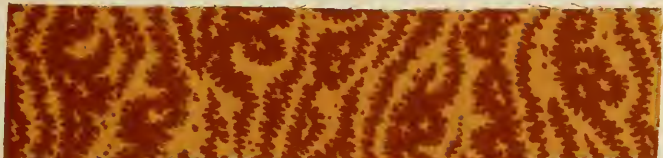
Ice Black padded with Brilliant Benzo Blue G B.

27



Ice Bordeaux padded with Benzo Green G and Chrysophenine.

28



Dyed with 6% Toluylene Orange G, printed with diazotised Paranitraniline.

Direct Printing.

The following Benzidine Colours can be printed on cotton material:

Red Dyestuffs:

Benzo Purpurine 1B, 4B, 6B
Brilliant Congo G
Brilliant Geranine B, 3B
Congo Red 4R
Congo Rubine
Delta-Purpurine 5B
*) Geranine G
Rose Azurine B, G.

Orange Dyestuffs:

Benzo Orange R
Congo Orange G
Mikado Orange 3R, 4R
Toluylene Orange G.

Yellow Dyestuffs:

Chloramine Yellow
Chrysamine G, R
Chrysophenine.

Green Dyestuffs:

Benzo Green G
Benzo Olive.

Blue Dyestuffs:

Azo Blue
Benzo Azurine G, R
Benzo Blue RW, 3B
Benzo Cyanine 3B
Benzo Sky Blue
Benzo Black Blue G, 5G
Benzo Chrome Black Blue B
Brilliant Benzo Blue 6B.

Violet Dyestuffs:

Azo Violet R
Benzo Violet R.

Brown Dyestuffs:

Benzo Brown B, G, G, NB
Benzo Chrome Brown R, B, G
Congo Corinth G
Chloramine Brown G
Toluylene Brown B, M, R.

Grey Dyestuffs:

Benzo Fast Black
Benzo Grey S extra
Direct Blue Black B
Direct Deep Black T.

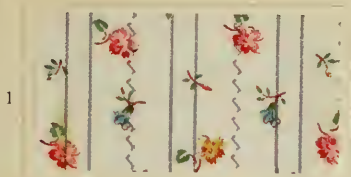
Black Dyestuffs:

Direct Blue Black B
Direct Deep Black T.

*) becomes somewhat faster when acetate of chrome is used.

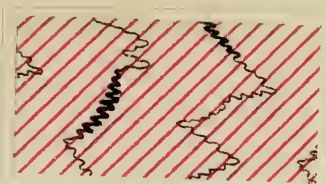
Cotton printing.

Table 4.



1

Cover Print: Direct Blue Black B over coloured print.



2

Cover Print: Brilliant Geranine B over Aniline Black.



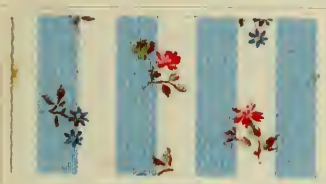
3

Cover Print: Benzo Violet R over coloured print.



4

Cover Print: Brilliant Benzo Blue G B over coloured print.



5

Cover Print: Benzo Sky Blue over coloured print.



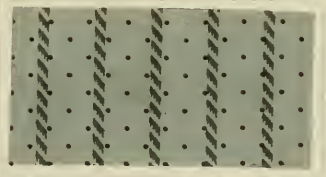
6

First Print: Aniline Black.
Cover Print: Chloramine Yellow.



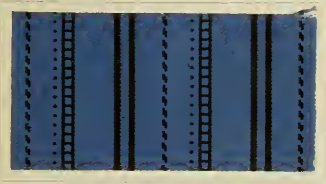
7

Cover Print: Congo Orange G over coloured print.



8

Benzo Green G padded and printed.
Cover Print: Fast Black.



9

Padded: Benzo Blue 3 B.
Printed: Benzo Brown N B.



10

Benzo Chrome Brown G.

Padding.

Table 5.

To imitate certain woven effects the cotton material is padded on the machine, on one side, then dried and covered with Fast Black, and then steamed $\frac{1}{4}$ hour without pressure and finished.

No. 1.	
Dissolve:	
$\frac{1}{4}$ oz.	10 grms. Congo Orange G in
5 pints	4003 " water.
Boil:	
$2\frac{3}{4}$ pints	2300 " mucilage of traga-
	canth 65:1000
$1\frac{1}{4}$ lbs.	800 " wheat starch and
$3\frac{5}{8}$ pints	2887 " water.
10000 grms.	

No. 2.	
$\frac{1}{4}$ oz. or 10 grms.	Chrysophenine
other proportions same as given in No. 1.	

No. 3.	
Dissolve:	
$\frac{1}{4}$ oz.	13 grms. Benzo Chrome
	Black Blue B in
$2\frac{3}{8}$ pints	4000 " water.
Boil:	
$2\frac{1}{2}$ pints	2300 " mucilage of traga-
	canth 65:1000
1 lb.	800 " wheat starch and
$2\frac{3}{4}$ pints	2887 " water.
10000 grms.	

No. 4.	
$\frac{1}{4}$ oz. or 10 grms.	Geranine G
other proportions same as given in No. 1	

No. 5.	
Dissolve:	
$1\frac{1}{4}$ oz.	12,5 grms. Benzo Green G and
$\frac{1}{8}$ oz.	5,0 " Chrysophenine in
$2\frac{1}{2}$ galls.	3992,5 " water.
Boil:	
$11\frac{1}{2}$ pints	2300 " mucilage of traga-
	canth 65:1000
4 lbs. 6 oz.	700 " wheat starch and
15 pints	2990 " water.
10000 grms.	

No. 6.	
$\frac{1}{4}$ oz. or 10 grms.	Benzo Fast Black
other proportions same as given in No. 1.	

No. 7.	
$\frac{1}{4}$ oz. or 10 grms.	Brilliant Geranine B
other proportions same as given in No. 1.	

No. 8.	
$\frac{1}{4}$ oz. or 10 grms.	Brilliant Benzo Blue 6B
other proportions same as given in No. 1.	

No. 9.	
$\frac{1}{4}$ oz. or 10 grms.	Benzo Violet R
other proportions same as given in No. 1.	

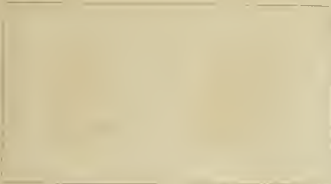
No. 10.	
$\frac{1}{4}$ oz. or 10 grms.	Benzo Chrome Brown R
other proportions same as given in No. 1.	

Fast Black.

3 pints or 300 grms.	Fast Black
$6\frac{3}{4}$ pints	" 620 " acetic acid starch tragacanth thickening
$2\frac{1}{2}$ noggins	" 80 " acetate of chrome 32° Tw.
1000 grms.	

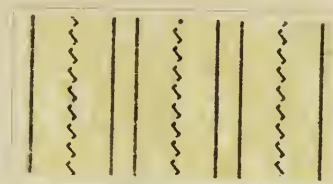
Cotton Printing
(padded).

1



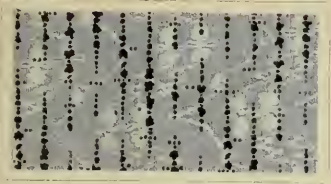
Congo Orange G.

2



Chrysophenine.

3



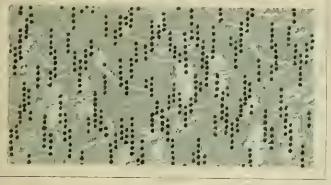
Benzo Chrome Black Blue B.

4



Geranine G.

5



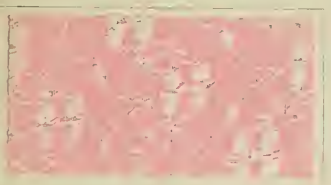
Benzo Green G and Chrysophenine.

6



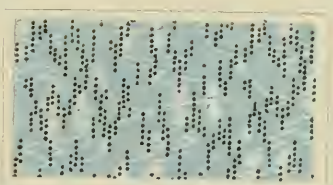
Benzo Fast Black.

7



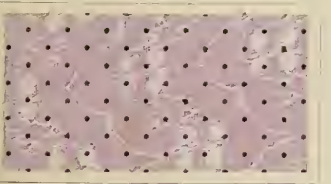
Brilliant Geranine B.

8



Brilliant Benzo Blue 6 B.

9



Benzo Violet R.

10



Benzo Chrome Brown R.

Dyeing after printing.

Cotton goods are frequently printed with Aniline Black and afterwards dyed at the boil with Benzidine Dyestuffs. This is done in an alkaline bath, or for light delicate shades in a bath containing common salt. Most of the Benzidine colours are suitable for this process.

Dyed with:

No. 1.

3% **Benzo Blue RW.**

No. 3.

3% **Congo Orange G.**

No. 5.

1% **Heliotrope BB**

1% soda

1% Turkey red oil. Dye at 176° Fahr.
lift, and add 20% Glauber's salt,
then boil for ¼ hour.

No. 7.

3% **Benzo Purpurine 10 B.**

No. 9.

4% **Benzo Chrome Black Blue B.**

No. 2.

3% **Benzo Blue RW**; after dyeing treat with sulphate of copper for ¼ hour at the boil, thereby being rendered much faster to light.

No. 4.

3% **Brilliant Geranine B.**
10% common salt.

No. 6.

1% **Chrysamine G.**

No. 8.

3% **Benzo Nitrol Brown G**; after washing and drying, run through a mangle with diazotised paranitraniline.

No. 10.

1½% **Chrysophenine**

1¼% **Brilliant Benzo Blue 6B**
10% common salt.

Cotton Printing
(dyed after printing).

Table 6.

1



Aniline Black;
dyed with 3% Benzo Blue RW.

2



Aniline Black; dyed with
3% Benzo Blue RW and coppered.

3



Aniline Black;
dyed with 3% Congo Orange G.

4



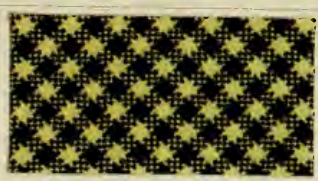
Aniline Black;
dyed with 3% Brilliant Geranine B.

5



Aniline Black;
dyed with 1% Heliotrope BB.

6



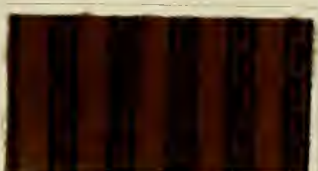
Aniline Black;
dyed with 1% Chrysamine G.

7



Aniline Black;
dyed with 3% Benzo Purpurine 10 B.

8



Aniline Black; dyed with
3% Benzo Nitrol Brown Gaud afterwards
treated with Paranitraniline.

9



Aniline Black; dyed with
4% Benzo Chrome Black Blue B.

10



Aniline Black; dyed with
1 1/2% Chrysofenine
and 1 1/2% Brilliant Benzo Blue GB.

No. 11.

Dyed with **Benzo Purpurine 4 B**;
cover printed with **Aniline Black**.

No. 13.

Dyed with 4% **Benzo Azurine G** in an
alkaline bath;
cover printed with **Aniline Black**.

No. 15.

Dyed with **Benzo Purpurine 4 B**;
cover printed with **Aniline Black**.

No. 12.

Dyed with **Benzo Sky Blue**;
cover printed with **Aniline Black**.

No. 14.

Dyed with 3% **Benzo Purpurine 4 B** in an
alkaline bath;
cover printed with **Aniline Black**.

No. 16.

Dyed with **Azo Violet**;
cover printed with **Aniline Black**.

After oxidizing, run through a weak solution of silicate of soda, wash and dry.

Printing of Basic Dyestuffs (without tannic acid) on dyed Benzidine ground.

The basic dyestuffs can not only be dyed on Benzidine colours without a mordant, but they can be printed on without any addition of tannic acid to the colour (Grossmann), and when afterwards steamed are tolerably fast to washing.

No. 1.

Dyed with:

3% **Chrysofenine**.

Cover printed with:

Dissolve:

1 oz. or 10 grms. **Brilliant Green** in
1½ pints „ 295 „ water, then thicken
with
3½ pints „ 700 „ acetic acid starch
tragacanth thickening
1000 grms.

No. 3.

Dyed with:

3% **Congo Orange G**.

Cover printed with:

Dissolve:

1½ oz. or 5 grms. **Methyl Violet 2B** in
1½ pints „ 295 „ water, then thicken
with
3½ pints „ 700 „ acetic acid starch
tragacanth thickening
1000 grms.

No. 2.

Dyed with:

2% **Brilliant Benzo Blue 6 B**.

Cover printed with:

Dissolve:

1½ oz. or 5 grms. **Diamond Fuchsine** in
1½ pints „ 295 „ water, then thicken
with
3½ pints „ 700 „ acetic acid starch
tragacanth thickening
1000 grms.

No. 4.

Dyed with:

1% **Geranine G**.

Cover printed with:

Dissolve:

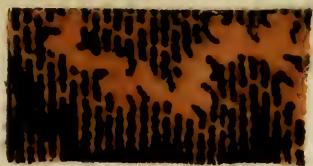
1½ oz. or 10 grms. **Methylene Blue BB** in
1½ pints „ 290 „ water, then thicken
with
3½ pints „ 700 „ acetic acid starch
tragacanth thickening
1000 grms.

Steam for ½ hour without pressure, soap cold for 2 minutes and then wash and dry.

Cotton printing
(dyed before printing).

Table 7

11



**Dyed with: Benzo Purpurine 4 B.
Cover printed with: Aniline Black.**

12



**Dyed with: Benzo Sky Blue.
Cover printed with: Aniline Black.**

13



**Aniline Black
printed on 4% Benzo Azurine G.**

14



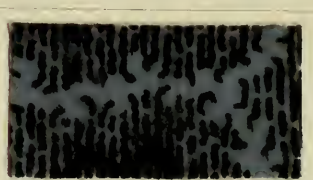
**Aniline Black
printed on 3% Benzo Purpurine 4 B.**

15



**Aniline Black
printed on Benzo Purpurine 4 B.**

16



**Aniline Black
printed on Azo Violet.**

Printing of basic colours (without tannin).

1



**Dyed with: 3% Chrysophenic.
Cover printed with: 1% Brilliant Green.**

2



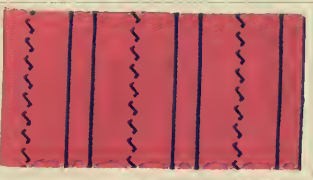
**Dyed with: 2% Brilliant Benzo Blue 6 B.
Cover printed with:
1% Diamond Fuchsine.**

3



**Dyed with: 3% Congo Orange B. Cover
printed with: 1/2% Methyl Violet 2 B.**

4



**Dyed with: 1% Geranine G. Cover
printed with: 1% Methylene Blue B B.**

Bronze Printing.

Cotton piece goods dyed with **Benzidine dyestuffs** are often printed with **Bronze colours**.

This can be done in various ways. The bronze colours can be thickened with albumen water, then printed and steamed, or first print on with varnish, and then strew bronze over the material, then allow to dry and brush.

The bronze colours are fixed only on those parts which were printed with varnish.

A third way is by printing on certain varnishes and bronze colours together.

7½–8¾ lbs. or 300–350 grms. Bronze colour (L. Auerbach & Co., Furth (Bavaria))

1¼ gallons „ 500 „ egg albumen water 1:1

½ gallon–3 pints „ 200–150 „ mucilage of tragacanth 65:1000
1000 grms.

Nos. 1, 3, 5, 6, 9, 10. — 7½ lbs. or 300 grms. Reichgold Flora fine

Nos. 2 and 8. — 8¾ lbs. „ 350 „ Patent Moss Green

Nos. 4 and 7. — 7½ lbs. „ 300 „ Aluminium Ia.

Print, with brush furnishers, on dampened goods, then dry and steam for 10–15 minutes without pressure.

The cotton goods are dyed at the boil with Benzidine colours for 1 hour with the addition of:

per 10 gallons liquor	per litre liquor
¼ lb.—1 lb.	2½–10 grms. Glauber's salt
2 oz.—4 oz.	1–2 „ soda ash.

The following were dyed with:

No. 1. 2% Brilliant Benzo Blue 6 B.

No. 2. 8% Pluto Black B.

No. 3. 3½% Benzo Green G.

No. 4. 4% Benzo Purpurine 10 B.

No. 5. 4% Benzo Violet R.

No. 6. | 1½% Benzo Chrome Brown B

| 1½% Benzo Chrome Brown R.

No. 7. 6% Benzo Chrome Black Blue B.

No. 8. 1% Benzo Fast Black.

No. 9. 4% Benzo Purpurine 4 B.

No. 10. 4% Benzo Blue B X.

The following recipe can be recommended for preparing a solution of India-rubber for printing.

Dissolve: 2 parts of India-rubber waste (unvulcanised) together with:

4 „	camphor oil
4 „	naphta, then mix with
1 „	copal varnish.

Cotton printing.
(Bronze prints).

Table 8.

1



Dyed with: 2% Brilliant Benzo Blue 6 B.

2



Dyed with: 8% Pluto Black B.

3



Dyed with: 3 1/2% Benzo Green G.

4



Dyed with: 4% Benzo Purpurine 10 B.

5



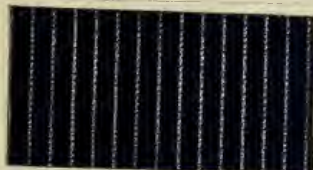
Dyed with: 4% Benzo Violet B.

6



Dyed with: { 1 1/2% Benzo Chrome Brown B
1 1/2% Benzo Chrome Brown R

7



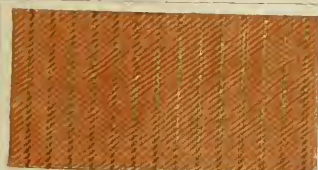
Dyed with:
6% Benzo Chrome Black Blue B.

8



Dyed with: 1% Benzo Fast Black.

9



Dyed with: 4% Benzo Purpurine 4 B.

10



Dyed with: 4% Benzo Blue BX.

When dyed on cotton the following Benzidine colours can be discharged with acetate of tin (with or without an addition of tin crystals):

Red dyestuffs:

Benzo Purpurine 1 B, 4 B, 6 B, 10 B
Brilliant Congo G, R
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Congo Red G, 4 R
Delta Purpurine 5 B, 7 B, G
Diamine Red B, 3 B
Geranine G, B B
Hessian Purple N (yellowish)
Rose Azurine B, G.

Orange dyestuffs:

Benzo Orange R
Brilliant Orange G
Chloramine Orange G
Congo Orange G, R
Mikado Orange 3 R, 4 R, 5 R
Toluylene Orange G (fairly good).

Yellow dyestuffs:

Chrysophenine
Curemine W.

Green dyestuffs:

Benzo Green B B, G
Benzo Olive (fairly good).

Blue dyestuffs:

Azo Blue
Benzo Azurine G, 3 G, R
Benzo Blue 2 B, 3 B, B X, R W, 2 R, 4 R
Benzo Chrome Black Blue B
Benzo Cyanine B, 3 B, R
Benzo Dark Blue 3 B ($\frac{3}{5}$ -Naphtol)
Benzo Indigo Blue (fairly good)
Benzo Sky Blue, 4 B
Benzo Red Blue G, R
Benzo Black Blue G, 5 G, R
Brilliant Azurine B, 5 G
Brilliant Benzo Blue 6 B
Brilliant Sulphon Azurine R
Congo Blue 2 B
Diazo Blue ($\frac{3}{5}$ -Naphtol) (fairly good)
Diazo Blue 3 R ($\frac{3}{5}$ -Naphtol)
Diazo Blue Black (undiazotised)
Diazo Indigo Blue B
Diazo Red Blue 3 R ($\frac{3}{5}$ -Naphtol)
Diazo Black B, 3 B (undiazotised)
Diazo Black R, R extra (undiazotised)
Diazurine ($\frac{3}{5}$ -Naphtol).

Violet dyestuffs:

Azo Violet
Benzo Violet R
Heliotrope
Heliotrope B B.

Brown dyestuffs:

Benzo Brown B, B X, N B X, B R, N B,
G G, R extra, N B R.
Benzo Chrome Brown B, G, R, 3 R, 5 G
Benzo Dark Brown
Benzo Black Brown (yellowish)
Chloramine Brown G (yellowish)
Congo Corinth G, B
Congo Rubine
Direct Fast Brown B, G G
Diazo Brown G (yellowish)
Diazo Brilliant Black B (diazotised and
developed with soda)
Direct Bronze Brown
Mikado Brown G, B
Toluylene Brown B, B B O, M, R (fairly good).

Grey dyestuffs:

Benzo Chrome Black N (yellowish)
Benzo Fast Grey (yellowish)
Benzo Grey
Benzo Grey S extra
Diazo Black B H N
Pluto Black B, G, R.

Black dyestuffs:

Benzo Fast Black
Benzo Black
Benzo Black S extra
Benzo Black Blue
Diazo Brilliant Black B, R ($\frac{3}{5}$ -Naphtol)
Diazo Black B, 3 B, B H X, R extra, R
($\frac{3}{5}$ -Naphtol yellowish)
Direct Blue Black B, N
Direct Deep Black E, E extra, R, G, T,
T X, R W (yellowish)
Pluto Black B, G, R.

Discharge Printing with Tin.

In discharging Benzidine dyestuffs, acetate of tin can be used, with or without the addition of tin crystals.

The bleached cotton goods are previously dyed with the Benzidine colours (for unbleached goods less colouring matter is needed, but, of course, not such a good white is obtained) then dried, printed with white discharge, steamed for 5-10 minutes, or run through the Mather and Platt several times, then washed (in some cases treated with weak acid and washed) and dried. The lighter a dischargeable Benzidine dyestuff is dyed, the easier it is to obtain a pure white, whereas the darker it is dyed, the more difficult it is to discharge. The strength of the discharge paste must be in proportion to the depth of shade and engraving of pattern. The more tin crystals are contained in discharge, the shorter time should the material be steamed, lest the cotton become tendered. The longer the goods are steamed the yellower the white becomes.

White Discharge I:

Boil: 4 $\frac{5}{8}$ galls. or 870 grms. acetate of tin 32° Tw.
7 lbs. " 110 " wheat starch and
1 pint " 20 " acetic acid 9° Tw. (30%).
1000 grms.

White Discharge II:

Boil: 8 $\frac{1}{2}$ lbs. or 138 grms. wheat starch
11 $\frac{1}{2}$ galls. " 277 " acetate of tin 32° Tw.
7 $\frac{1}{2}$ pints " 170 " gum water 1:1 and
13 $\frac{3}{4}$ galls. " 277 " water, boil, and then add
7 lbs. " 111 " tin crystals, whilst still lukewarm, and then
13 $\frac{3}{4}$ lbs. " 27 " citric acid
1000 grms.

Glycerine, acetine and a trace of Methylene Blue or Prussian Blue etc. are sometimes added to the white discharge. The latter colour prevents the discharged pieces from turning yellowish in course of time.

White discharge III is also very suitable for some dyestuffs and the discharge objects are not so liable to become yellow either in steaming or when the pieces are stocked.

White Discharge III:

F.

Boil: 2 $\frac{3}{4}$ lbs. or 90 grms. wheat starch
2 $\frac{1}{4}$ galls. " 720 " water
8 $\frac{1}{4}$ lbs. " 270 " white dextrine and
9 lbs. 6 oz. " 300 " yellow prussiate of potash,
then cool.

Dissolve:

Z.

18 $\frac{3}{4}$ lbs. or 600 grms. tin crystals in
2 $\frac{1}{8}$ galls. " 750 " gum water 1:1, and then add
2 $\frac{1}{4}$ lbs. " 72 " powdered tartaric acid.

When cold F is stirred into Z.

Steam for 5 minutes without pressure, then wash and dry.

These patterns were dyed for 1 hour at the boil with the addition of

per 10 gallons dye liquor	or	per litre dye liquor
1/4-1 lb.		2 1/2-10 grms. Glauber's salt,
1-2 oz. "		1-2 " soda ash.

No. 1.

4% Benzo Chrome Brown G.

No. 2.

2% Brilliant Benzo Blue 6 B.

No. 3.

4% Benzo Black Blue 5 G.

No. 4.

8% Pluto Black B.

No. 5.

1% Geranine G.

No. 6.

5% Diazo Blue

diazotised with:

4% nitrite

10% hydrochloric acid 30° Tw.

developed with:

4% Developer A (β-Naphtol).

No. 7.

8% Direct Blue Black B.

No. 8.

4% Congo Corinth G.

No. 9.

5% Brilliant Azurine B.

No. 10.

4% Toluylene Brown G.

Nos. 2, 8, 9, 10, 11, 13 and 15-18 were discharged with White Discharge II.

Nos. 1, 3, 4, 5, 6, 7, 12 and 14 were discharged with White Discharge III.

Cotton Printing.
(Discharge Printing with tin).

1



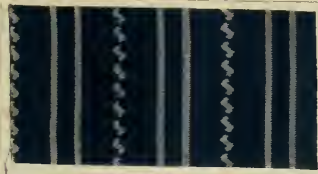
Dyed with: 4% Benzo Chrome Brown G;
discharged with tin.

2



Dyed with: 2% Brilliant Benzo Blue 6 B;
discharged with tin.

3



Dyed with: 4% Benzo Black Blue 5 G;
discharged with tin.

4



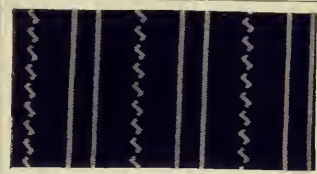
Dyed with: 8% Pluto Black B;
discharged with tin.

5



Dyed with: 1% Geranine G;

6



Dyed with: 5% Diazo Blue (Beta-Naphtol);
discharged with tin.

7



Dyed with: 8% Direct Blue Black B;
discharged with tin.

8



Dyed with: 4% Congo Coriuth G.

9



Dyed with: 5% Brilliant Azurine B.

10



Dyed with: 4% Toluylene Brown B.

Dyed as above:

No. 11.	No. 12.
2% Congo Orange G.	4% Benzo Chrome Brown B.
No. 13.	No. 14.
1% Benzo Fast Black.	3½% Benzo Green G.
No. 15.	No. 16.
2% Chrysophenine.	4% Benzo Chrome Brown R.
No. 17.	No. 18.
6% Benzo Violet R.	5% Benzo Purpurine 4 B.

No. 19.

Dyed with: 2% Brilliant Azurine 5 G
 discharged with: White Discharge IV
 cover printed with: Aniline Black.

Boil: **Aniline Black.**

2½ galls. or 400 grms. water	
3¼ lbs. „ 50 „ wheat starch	
1 lb. 6½ oz. „ 22,5 „ chlorate of potash	
1 lb. 14 oz. „ 30 „ yellow prussiate of potash,	
	and when cold add
½ 7½ noggins „ 1 38 „ aniline oil	
½ 8¼ noggins „ 1 50 „ hydrochloric acid 27° Tw.	

Steam for 5 minutes in the Mather & Platt, soap slightly, wash and dry.

White Discharge IV.

1 gall. or 196 grms. tartrate of tin and ammonia discharge	
1 gall. „ 152 „ neutral thickening of starch tragacanth	
	348 grms.

Tartrate of tin and ammonia discharge.

15 lbs. or 900 grms. tin crystals dissolved in	
1½ gall. „ 900 „ water, add slowly	
7/8 gall. „ 570 cc. ammonia, allow to settle, run off	
	the clear water which must be
	neutral, and then add cold
1¼ galls. „ 900 grms. tartrate of ammonia.	

Dissolve: **Tartrate of ammonia.**

10 lbs. or 450 grms. tartaric acid in	
1 gall. „ 150 „ hot water, and when lukewarm add	
1¼ galls. „ 540 cc. ammonia, the solution must react	
	alkaline.

Cotton Printing.
(Discharge Printing with tin).

Table 10.

11



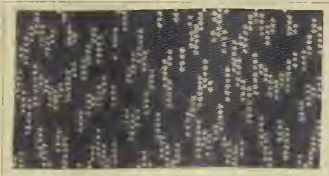
**Dyed with: 2% Congo Orange G;
discharged with tin.**

12



**Dyed with: 4% Benzo Chrome Brown B;
discharged with tin.**

13



**Dyed with: 1% Benzo Fast Black;
discharged with tin.**

14



**Dyed with: 3½% Benzo Green G;
discharged with tin.**

15



**Dyed with: 2% Chrysophenine;
discharged with tin.**

16



**Dyed with: 4% Benzo Chrome Brown R;
discharged with tin.**

17



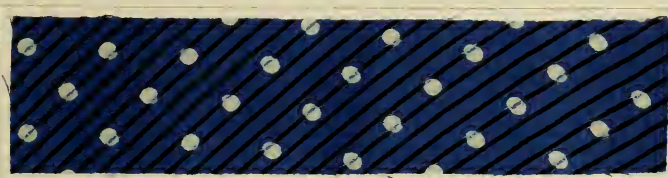
**Dyed with: 6% Benzo Violet R;
discharged with tin.**

18



**Dyed with: 5% Benzo Purpurine 4 B;
discharged with tin.**

19



**Dyed with: 2% Brilliant Azurine 5 G; discharged with tin,
and cover printed with Aniline Black.**

20

Colour Discharge Printing with Tin.

The following undischARGEABLE dyestuffs can be used with tin crystals for coloured discharge on Benzidine dyes.

Red dyestuffs:

Alizarine Red (alumina)
Brilliant Rhoduline Red B P
Pyronine G
Rhodamine S, B, G
Rhoduline Red G
Safranine FF extra.

Yellow dyestuffs:

Auramine II
Persian Berry Extract (tin).

Green dyestuffs:

Brilliant Green.

Blue dyestuffs:

Chrome Blue (Chrome)
Celestine Blue B (Chrome)
Prussian Blue
Methylene Blue B B.

Violet dyestuffs:

Methyl Violet 2 B
Rhoduline Violet.

The dischargeable Benzidine colours can be colour discharged with tin crystals and undischageable basic dyestuffs, as well as Extract of Persian Berries, lakes etc.

The following were dyed in an alkaline bath:

No. 1.

Dyed with: 4% **Benzo Purpurine 4 B** on flannelette.

Green Discharge.

Boil:	5 oz. or	20 grms.	Brilliant Green crystals
	19 oz.	75 "	wheat starch
	1 $\frac{1}{4}$ pints	105 "	water
	5 $\frac{1}{2}$ noggins	110 "	acetic acid 9° Tw. (30%)
	11 $\frac{1}{2}$ noggins	260 "	gum water 1:1, and then add
	2 $\frac{3}{4}$ pmts	250 "	acetate of tin 32° Tw.
	2 $\frac{1}{2}$ oz.	10 "	tin crystals, and when cold add
	6 $\frac{1}{4}$ noggins	150 "	acetic acid tannic acid solution 1:1
	5 oz.	20 "	citric acid (powdered)
		1000 grms.	

No. 2.

Dyed with: 3% **Benzo Blue RW** and after-treated with
1% sulphate of copper for $\frac{1}{2}$ hour at the boil.

This treatment renders the blue very fast to light.

Persian Berry Yellow Discharge.

Discharged with:

	2 $\frac{1}{2}$ galls. or	750 grms.	White Discharge II (see page 25)
	7 $\frac{1}{2}$ noggs.	90 "	Extract of Persian berries 52° Tw.
	3 $\frac{1}{4}$ pints	130 "	acetic acid thicken-
	1 noggin	10 "	water [ing
	$\frac{1}{2}$ pint	20 "	acetic acid 9° Tw. (30%)
		1000 grms.	

No. 4.

Dyed with: 8% **Direct Deep Black T.**

Green Discharge.

Boil:	$\frac{1}{2}$ oz. or	5 grms.	Brilliant Green crystals
	2 $\frac{1}{2}$ oz.	25 "	Auramine G
	7 $\frac{1}{2}$ oz.	75 "	wheat starch
	$\frac{1}{2}$ pint	190 "	acetic acid 9° Tw. (30%)
	$\frac{1}{2}$ pint	95 "	water
	1 pint	260 "	gum water 1:1
	4 $\frac{1}{2}$ noggs.	250 "	acetate of tin 32° Tw.
	2 oz.	20 "	tin crystals, then add
	7 $\frac{1}{2}$ oz.	75 "	tannic acid dissolved in
	1 $\frac{1}{2}$ noggs.	75 "	acetic acid 9° Tw. (30%)
	2 oz.	20 "	powdered citric acid
		1000 grms.	

No. 3.

Dyed with: 2% **Congo Orange G.**

Violet Discharge.

Boil:	3 oz. or	30 grms.	Rhoduline Violet
	7 $\frac{1}{2}$ oz.	75 "	wheat starch
	$\frac{1}{2}$ pint	100 "	acetic acid 9° Tw. (30%)
	$\frac{1}{2}$ pint	95 "	water
	1 pint	260 "	gum water 1:1 and
	4 $\frac{1}{2}$ noggs.	250 "	acetate of tin 32° Tw. and then add
	2 oz.	20 "	tin crystals
	7 $\frac{1}{2}$ oz.	75 "	tannic acid dissolved in
	1 $\frac{1}{2}$ noggs.	75 "	acetic acid 9° Tw. (30%)
	2 oz.	20 "	powdered citric acid
		1000 grms.	

No. 5.

Dyed with: 5% **Diazo Blue.**

Diazotised with: 4% nitrite, 10% hydrochloric acid 30° Tw.

Developed with: 4% developer A (β -Naphтол)

Persian Berry Yellow Discharge.

	2 galls. or	700 grms.	White Discharge II (see page 25)
	7 $\frac{1}{2}$ noggs.	90 "	Extract of Persian berries 52° Tw.
	4 $\frac{1}{2}$ pints	180 "	acetic acid thicken-
	1 noggin	10 "	water [ing
	$\frac{1}{2}$ pint	20 "	acetic acid 9° Tw. (30%)
		1000 grms.	

No. 6.

Dyed with: 1% Brilliant Geranine B.

Boil:		Blue Discharge.	
1 oz.	or 10 grms.	Methyl Violet 6B	
7½ oz.	75	wheat starch	
1½ pints	235	water	
1 pint	260	gum water 1:1, then add	
¾ pint	200	acetic acid 9° Tw. (30%)	
1 noggin	50	acetate of tin 32° Tw.,	
		then further add	
7½ oz.	75	tannic acid dissolved in	
1½ noggs.	75	acetic acid 9° Tw. (30%)	
2 oz.	20	powdered citric acid	
1000 grms.			

No. 7.

Dyed with: 1½% Benzo Grey S extra.

Boil:		Pink Discharge.	
3 oz.	or 30 grms.	Rhodamine 6G	
7½ oz.	75	wheat starch	
1½ pint	100	acetic acid 9° Tw. (30%)	
2½ noggs.	265	water	
1 pint	260	gum water 1:1, then add	
½ pint	100	acetate of tin 32° Tw.,	
		and then add	
7½ oz.	75	tannic acid dissolved in	
1½ noggs.	75	acetic acid 9° Tw. (30%)	
2 oz.	20	powdered citric acid	
1000 grms.			

Boil:		Green Discharge.	
2 oz.	or 20 grms.	Brilliant Green crystals	
7½ oz.	75	wheat starch	
1½ pint	100	acetic acid 9° Tw. (30%)	
1½ pints	315	water	
1 pint	260	gum water 1:1,	
		and then add	
1 noggin	60	acetate of tin 32° Tw.	
7½ oz.	75	tannic acid dissolved in	
1½ noggs.	75	acetic acid 9° Tw. (30%)	
2 oz.	20	powdered citric acid	
1000 grms.			

Persian Berry Yellow Discharge.

1½ noggs. or 250 grms.	White discharge II (see page 25)
3½ noggs.	90 Extract of Persian berries 52° Tw.
1 gallon	640 acetic acid thickening
1 noggin	20 acetic acid 9° Tw. (30%)
1000 grms	

No. 8.

Dyed with: 3% Benzo Green G.

Boil:		Pink Discharge.	
3 oz.	or 30 grms.	Rhodamine 6G	
7½ oz.	75	wheat starch	
1 noggin	60	water	
½ pint	100	acetic acid 9° Tw. (30%)	
1 pint	260	gum water 1:1	
1½ pint	250	acetate of tin 32° Tw.	
		and add	
2½ oz.	25	tin crystals, then	
9 oz.	90	tannic acid dissolved in	
½ pint	90	acetic acid 9° Tw. (30%)	
2 oz.	20	powdered citric acid	
1000 grms.			

Printed with:		Fast Black.	
3 pints or 300 grms.	Fast Black		
6¼ pints	620	acetic acid starch-tragacanth thickening	
2½ noggs.	80	acetate of chrome 32° Tw.	
1000 grms.			

No. 9.

Dyed with: 3% Benzo Chrome Brown B and treated at the boil for ¼ hour with 2% sulphate of copper 3% bichromate of potash.

Pink Discharge.

Discharged with: 30 grms. Rhodamine 6G the same as No. 8.

Persian Berry Yellow Discharge.

5½ pints or 500 grms.	White discharge II (see page 25)
3½ noggs.	90 Extract of Persian berries 52° Tw.
1½ noggin	10 water
1 noggin	24 acetic acid 9° Tw. (30%)
4¼ pints	380 acetic acid thickening
1000 grms.	

Cotton Printing.
(Coloured discharge printing with tin.)

Table 11.



Dyed with: 4% Benzo Purpurine 4B; discharged with: 2% Brilliant Green.



Dyed with: 3% Benzo Blue RW (coppered); discharged with: Persian berry Yellow discharge.



Dyed with: 2% Congo Orange G; discharged with: 3% Rhoduline Violet.



Dyed with: 8% Direct Deep Black T; discharged with: 2.5% Auramine G, 0.5% Brilliant Green crystals.



Dyed with: 5% Diazo Blue (Beta Naphtol); discharged with: Persian berry Yellow discharge.



Dyed with: 1% Brilliant Geranine B; discharged with: 1% Methyl Violet 6B.



Dyed with: 1% Benzo Grey S extra; discharged with: 3% Rhodamine 6G, 2% Brilliant Green, Persian berry Yellow discharge.



Dyed with: 3% Benzo Green G; discharged with: 3% Rhodamine 6G; printed with: 30% Fast Black.



Dyed with: 3% Benzo Chrome Brown R; discharged with: 3% Rhodamine 6G, Persian berry Yellow discharge.

No. 10.

Dyed with: 6% **Benzo Chrome Black Blue B.**

Boil:		Red Discharge.	
{	7 ¹ / ₂ oz. or	60 grms.	Rhodamine 6 G
{	1 oz. "	8 "	Auramine II
{	9 ¹ / ₂ oz. "	75 "	wheat starch
{	3 ¹ / ₄ noggs. "	132 "	acetic acid 9° Tw. (30%)
{	5 ¹ / ₈ noggin "	25 "	water
{	1 ¹ / ₂ noggs. "	80 "	gum water 1:1, and then add
	5 ¹ / ₂ noggs. "	250 "	acetate of tin 32° Tw.
	3 ³ / ₄ oz. "	30 "	tin crystals
	1 ¹ / ₄ pints "	320 "	acetic acid tannic acid solution 1:1
	2 ¹ / ₂ oz. "	20 "	powdered citric acid
		1000 grms.	

White Discharge.

1 gall. or	1000 grms.	White discharge II (see page 25)
3 noggs. "	100 "	glycerine 48° Tw.

No. 12.

Dyed with: 3% **Heliotrope BB.**

Boil:		Green Discharge.	
{	1 ¹ / ₂ oz. or	5 grms.	Brilliant Green crystals
{	2 ¹ / ₂ oz. "	25 "	Auramine G
{	7 ¹ / ₂ oz. "	75 "	wheat starch
{	1 pint "	260 "	gum water 1:1
{	3 ¹ / ₄ pint "	160 "	acetic acid 9° Tw. (30%)
{	1 ¹ / ₄ pints "	215 "	water
{	1 ¹ / ₂ noggs. "	90 "	acetate of tin 32° Tw.
{	7 ¹ / ₂ oz. "	75 "	tannic acid dissolved in
{	1 ¹ / ₂ noggs. "	75 "	acetic acid 9° Tw. (30%)
	2 oz. "	20 "	powdered citric acid
		1000 grms.	

White Discharge.**White discharge II** (see page 25).

No. 11.

Dyed with: 4% **Benzo Brown GG.**

Boil:		Green Discharge.	
{	2 oz. or	20 grms.	Brilliant Green crystals
{	7 ¹ / ₂ oz. "	75 "	wheat starch
{	1 pint "	260 "	gum water 1:1
{	1 ¹ / ₂ pint "	100 "	acetic acid 9° Tw. (30%)
{	2 ¹ / ₂ noggs. "	125 "	water
{	1 ¹ / ₄ pints "	250 "	acetate of tin 32° Tw.
{	7 ¹ / ₂ oz. "	75 "	tannic acid dissolved in
{	1 ¹ / ₂ noggs. "	75 "	acetic acid 9° Tw. (30%)
	2 oz. "	20 "	powdered citric acid
		1000 grms.	

No. 13.

Dyed with: 4% **Brilliant Azurine 5 G** afterwards
treated with
1% sulphate of copper for 1¹/₂ hour
at the boil.

Discharged with: **Persian berry Yellow discharge**
the same as No. 2 (see page 31).

Printed with: **Fast Black** the same as No. 8 (see
page 32).

Cotton Printing.
(Coloured discharges with tin.)

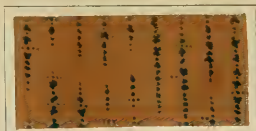
Table 12.

10



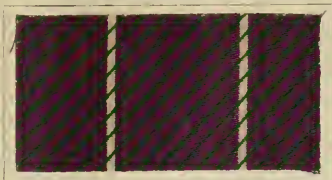
Dyed with: 6% Benzo Chrome Black Blue B; discharged with: 6% Rhodamine 6 G and 0.8% Auramine II and for White with acetate of tin.

11



Dyed with: 4% Benzo Brown GG; discharged with: 2% Brilliant Green crystals.

12



Dyed with: 3% Heliotrope BB; discharged with: 2½% Auramine G, ½% Brilliant Green and for White with tin crystals.

13



Dyed with: 4% Benzo Azorine 5G (coppered); discharged with: Persian berry Yellow discharge; cover printed with: Fast Black.

14



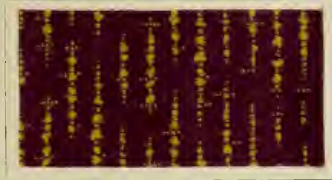
Dyed with: 3% Benzo Blue 2B; discharged with: 2% Saffranine FF extra, 1% Auramine G; cover printed with: Fast Black.

15



Dyed with: 5% Yellow PR, 0.1% Toluylene Orange G, 0.8% Benzo Sky Blue; discharged with: tin crystals.

16



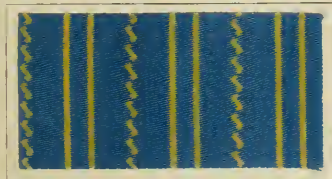
Dyed with: 4% Azo Violet; discharged with: 3% Auramine II.

17



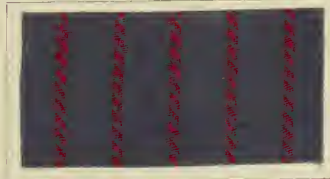
Dyed with: 3% Benzo Azorine 3G; discharged with: Persian berry Yellow discharge and for White with tin crystals.

18



Dyed with: 1% Benzo Sky Blue; discharged with: Persian berry Yellow discharge.

19



Dyed with: 1% Benzo Fast Black; discharged with: 2% Brilliant Rhoduline Red BD in paste.

No. 14.

Dyed with: 3% **Benzo Blue 2 B.****Red Discharge.**

Boil	2 oz. or	20 grms.	Saffranine FF extra
	1 oz. "	10 "	Auramine G
	7½ oz. "	75 "	wheat starch
	1 pint "	260 "	gum water 1:1
	½ pint "	115 "	water
	½ pint "	100 "	acetic acid 9° Tw. (30%)
	1¼ pints "	250 "	acetate of tin 32° Tw. and then add
	7½ oz. "	75 "	tannic acid
	1½ noggs. "	75 "	acetic acid 9° Tw. (30%)
	2 oz. "	20 "	citric acid crystals
			1000 grms.

No. 16.

Dyed with: 4% **Azo Violet.****Yellow Discharge.**

Boil	3 oz. or	30 grms.	Auramine II
	7½ oz. "	75 "	wheat starch
	1 pint "	260 "	gum water 1:1
	½ pint "	110 "	water
	½ pint "	100 "	acetic acid 9° Tw. (30%)
	1¼ pint "	250 "	acetate of tin 32° Tw. and then add
	½ oz. "	5 "	tin crystals
	7½ oz. "	75 "	tannic acid dissolved in
	1½ noggs. "	75 "	acetic acid 9° Tw. (30%)
	2 oz. "	20 "	powdered citric acid
			1000 grms.

No. 18

Dyed with: 1% **Benzo Sky Blue.****Persian Berry Yellow Discharge.**

13½ pints or	600 grms.	White discharge II (see page 25)
7½ noggs.	90 "	Extract of Persian berries 52° Tw.
2 noggs.	20 "	acetic acid 9° Tw. (30%)
1 nogg.	10 "	water
7 pints	280 "	acetic acid thickening
		1000 grms.

No. 15.

Dyed with: 5% **Yellow PR**0,1% **Toluylene Orange G**0,8% **Benzo Sky Blue.**

Discharged with: White discharge II (see page 25).

Toluylene Orange G and Benzo Sky Blue are dischargeable with tin crystals, whereas Primuline Yellow being undischageable remains.

No. 17.

Dyed with: 3% **Benzo Azurine 3 G.**

White discharge II (page 25) reduced 1W

Persian Berry Yellow Discharge.

13½ noggs. or	150 grms.	White discharge II (see page 25)
7½ noggs.	90 "	Extract of Persian berries 52° Tw.
1 nogg.	10 "	water
2½ galls.	750 "	acetic acid thickening
2 noggs.	20 "	acetic acid 9° Tw. (30%)
		1000 grms.

No. 19.

Dyed with: 1% **Benzo Fast Black.****Red Discharge.**

Boil	2 oz. or	20 grms.	Brilliant Rhoduline Red BD in paste
	7½ oz. "	75 "	wheat starch
	1 pint "	260 "	gum water 1:1
	1 pint "	205 "	acetic acid 9° Tw. (30%)
	1 pint "	200 "	water
	1¼ noggs. "	70 "	acetate of tin 32° Tw., and then add
	7½ oz. "	75 "	tannic acid dissolved in
	1½ noggs. "	75 "	acetic acid 9° Tw. (30%)
	2 oz. "	20 "	powdered citric acid
			1000 grms.

The pieces printed with discharge colours are steamed for 10 mins. and passed through a bath of tartar emetic, then washed and dried.

Cotton Printing.

Table 13.

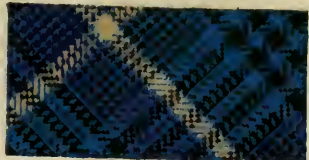
(Colour discharge printing with tin.)

20



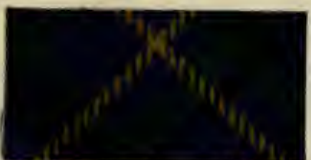
Dyed with: Benzo Purpurine 4 B;
discharged with: Persian Berry Yellow
and Methyl Violet.

21



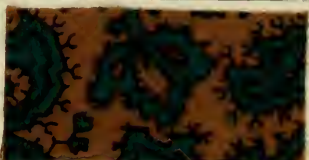
Dyed with: Benzo Sky Blue;
discharged with: Methyl Violet.

22



Dyed with: Diazo Black B;
discharged with:
f Brilliant Green, Persian Berry Yellow
and Auramine.

23



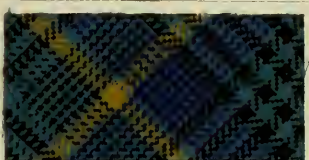
Dyed with: Benzo Purpurine 10 B;
discharged with: Brilliant Green.

24



Dyed with: Benzo Brown N B;
discharged with: Persian Berry Yellow
and Brilliant Green.

25



Dyed with: Benzo Olive and Benzo
Black Blue 5 G; discharged with:
Methyl Violet and Persian Berry Yellow.

26



Dyed with: Heliotrope BB and
Geranine G; discharged with: Persian
Berry Yellow and Methyl Violet.

27



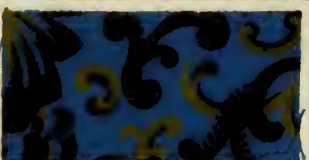
Dyed with: Benzo Purpurine 1 B;
discharged with: Methyl Violet,
Brilliant Green, Persian Berry Yellow.

28



Dyed with: Benzo Brown NB and
Geranine G; discharged with:
Methylene Blue and Brilliant Green.

29



Dyed with: Benzo Sky Blue;
discharged with: Persian Berry Yellow
and Methyl Violet.

No. 30.

Dyed with:

1% **Benzo Cyanine 3 B** $\frac{1}{2}$ % **Chrysophenine.**

Discharged with:

tin-discharge

Brilliant Green crystals.

Printed with:

Steam Black.

No. 32.

Dyed with:

1 $\frac{1}{2}$ % **Benzo Cyanine 3 B**0,56% **Diazo Black B.**

Discharged with:

Persian Berry Yellow**Brilliant Green crystals.**

Printed with:

Steam Black.

No. 34.

Dyed with:

1% **Benzo Cyanine 3 B**0,64% **Chrysophenine.**

Discharged with:

Brilliant Green crystals.

No. 31.

Printed with:

1 $\frac{1}{4}$ % **Benzo Purpurine 10 B** $\frac{1}{4}$ % **Geranine BB** $\frac{1}{8}$ % **Benzo Purpurine 4 B.**

Discharged with:

Brilliant Green crystals.

No. 33.

Dyed with:

3% **Benzo Purpurine 4 B.**

Discharged with:

Methylene Blue**Brilliant Green crystals.**

Printed with:

Logwood Black.

No. 35.

Dyed with:

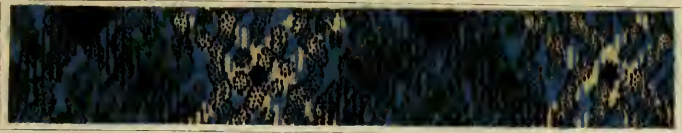
3% **Benzo Purpurine 4 B.**

Discharged with:

Methylene Blue.

Cotton Printing.
(Coloured discharges with tin).

30



Dyed with: Benzo Cyanin 3B and Chrysophenine; discharged with: tin discharge (for white), Brilliant Green; printed with: Steam Black.

31



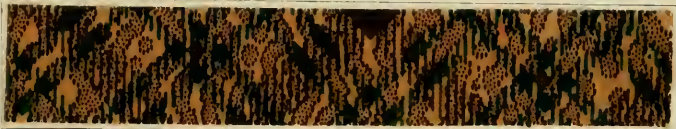
Dyed with: Benzo Purpurine 10 B, Geranine B B, Benzo Purpurine 4 B; discharged with: Brilliant Green crystals.

32



Dyed with: Benzo Cyanine 3 B, Diazo Black B; discharged with: Persian Berry Yellow, Brilliant Green; printed with: Steam Black.

33



Dyed with: Benzo Purpurine 4 B; discharged with: Methylene Blue, Brilliant Green; printed with: Logwood Black.

34



Dyed with: Benzo Cyanine 3 B and Chrysophenine; discharged with: Brilliant Green crystals.

35



Dyed with: Benzo Purpurine 4 B; discharged with: Methylene Blue.

When dyed on cotton the following Benzidine dyestuffs cannot be discharged with acetate of tin.

Red Dyestuffs:

Yellow PR (developed).

Yellow Dyestuffs:

Chloramine Yellow

Curcumine S

Direct Yellow R

Mikado Yellow G

Yellow PR

Thiazole Yellow.

Brown and Claret Dystuffs:

Benzo Brown 5R (turns yellow)

Diazo Bordeaux (developer A)

Hessian Brown B

Katigene Black Brown

Yellow PR with developer B (turns yellow).

Black Dyestuffs:

Benzo Chrome Black, after chromed (reddish brown).

Diazo Black II (turns yellow).

Discharge Printing with Zinc powder.

Dyed on cotton the following Benzidine colours can be discharged with zinc powder:

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B, 6 B, 10 B
Brilliant Congo G, R
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Congo Red, G, GR, 4 R
Delta Purpurine 5 B, 7 B, G
Diamine Red B, 3 B
Geranine G, B B
Hessian Brilliant Purple B
Hessian Purple N, B, NB (yellow)
Rose Azurine B, G.

Orange Dyestuffs:

Benzo Orange R
Brilliant Orange G
Chloramine Orange G
Congo Orange G, R
Mikado Orange 2 R, 3 R, 4 R, 5 R, G O, G,
R, R O, 2 R O, 3 R O, 4 R, 5 R O.
Tolulene Orange G.

Yellow Dyestuffs:

Chrysamine G, R, R S, G S
Chrysofenine
Curcumine S, W
Direct Yellow R (fairly well)
Hessian Yellow
Mikado Yellow.

Green Dyestuffs:

Benzo Dark Green
Benzo Green B B, G
Benzo Olive (fairly good).

Blue Dyestuffs:

Azo Blue
Benzo Azurine G, 3 G, R
Benzo Black Blue G, 5 G, R
Benzo Blue B X, 2 B, 3 B, R W, 2 R, 4 R
Benzo Chrome Black Blue B
Benzo Cyanine B, 3 B, R
Benzo Indigo Blue
Benzo Navy Blue B
Benzo Red Blue G, R
Benzo Sky Blue, 4 B
Brilliant Azurine B, 5 G
Brilliant Benzo Blue 6 B
Brilliant Sulphon Azurine R
Chicago Blue B, R
Congo Blue 2 B
Diazo Black B, 3 B, R, R extra (undiazotised)

Diazo Blue (β -Naphтол)
Diazo Blue 3 R (β -Naphтол).
Diazo Blue Black (undiazotised)
Diazo Navy Blue 3 B (β -Naphтол)
Diazo Indigo Blue B
Diazo Red Blue 3 R (β -Naphтол)
Diazurine B (β -Naphтол).

Violet Dyestuffs:

Azo Violet
Benzo Violet R
Diazo Violet R (β -Naphтол).
Heliotrope (fairly good)
Heliotrope B B

Brown Dyestuffs:

Benzo Brown B, B X, N B X, B R, N B,
G G, R extra, N B R.
Benzo Chrome Brown G, B, R, 3 R, 5 G
Benzo Dark Brown
Benzo Black Brown
Chloramine Brown G
Congo Rubine
Diazo Brown G
Diazo Brilliant Black B (diazotised and
developed with soda)
Direct Bronze Brown
Direct Fast Brown G G, B
Hessian Brown B
Mikado Brown B, G
Tolulene Brown B, B B O, M, R.

Grey Dyestuffs:

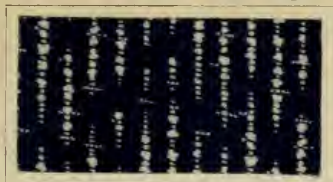
Benzo Chrome Black N
Benzo Fast Grey
Benzo Grey
Benzo Grey S extra
Diazo Black B H N
Pluto Black B, G, R.

Black Dyestuffs:

Benzo Fast Black
Benzo Black, S extra
Diazo Brilliant Black B, R (β -Naphтол)
Diazo Blue Black (β -Naphтол)
Diazo Black B, 3 B, R, B H N, R extra
(β -Naphтол)
Direct Blue Black B, N
Direct Deep Black E, E extra, G, R, T, R W
Pluto Black B, G, R.

Cotton Printing.
(Discharges with zinc powder.)

Table 15.



Dyed with: 6% Benzo Chrome Black Blue B; discharged with zinc powder.



Dyed with: 4% Azo Violet; discharged with zinc powder.



Dyed with: 5% Benzo Brown BX; discharged with zinc powder.



Dyed with: 5% Brilliant Purpurine R; discharged with zinc powder.



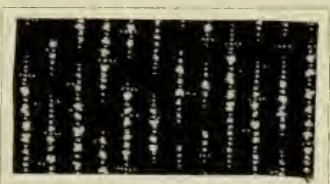
Dyed with: 2½% Congo Orange R; discharged with zinc powder.



Dyed with: 3% Benzo Cyanine B; discharged with zinc powder.



Dyed with: 3% Benzo Olive; discharged with zinc powder.



Dyed with: 8% Pluto Black B; discharged with zinc powder.



Dyed with: 1% Benzo Fast Grey; discharged with zinc powder.



Dyed with: 2% Chrysophenine; discharged with zinc powder.

When dyed on cotton the following Benzidine colours cannot be discharged with zinc powder:

Red Dyestuffs:

Yellow PR (developed).

Yellow Dyestuffs:

Chloramine Yellow

Curcumine S

Yellow PR

Thiazole Yellow.

Brown Dyestuffs:

Katigene Black Brown.

Black Dyestuffs:

Benzo Chrome Black.

The following dyestuffs are suitable for coloured discharges with zinc powder on Benzidine colours:

Red Dyestuffs:

Brilliant Rhoduline Red B D
Yellow P R (developed)
Rhoduline Red G
Saffranine F F extra.

Yellow Dyestuffs:

Yellow P R.

It can be discharged with:

1 lb. or 100 grms.	Yellow P R
2 lbs. "	200 " dextrine
3 $\frac{1}{2}$ pints "	400 " water
2 $\frac{2}{3}$ lbs. "	240 " zinc powder
1 $\frac{4}{5}$ lbs. "	180 " bisulphite of soda 52° Tw.
4 oz. "	24 " glycerine 48° Tw.
3 oz. "	16 " ammonia.

Steam, sour, wash and dry.

In order to obtain a Red instead of a Yellow it can be diazotised and developed with β -Naphtol Developer.

Blue Dyestuffs:

Methylene Blue B B.

The following recipe can be used for discharging:

Dissolve:

{	10 oz. or 10 grms.	Saffranine F F extra in
	3 pints "	60 " water and warm with
	1 $\frac{1}{2}$ galls. "	300 " gum water 1:1, and then add
	18 $\frac{3}{4}$ lbs. "	300 " zinc powder; when cooled down add
	11 pints "	300 " sodium bisulphite 72° Tw.
{	15 oz. "	15 " tannic acid dissolved in
	3 noggins "	15 " acetic acid 9° Tw. (30 %)
	<hr/> 1000 grms.	

Steam for $\frac{1}{2}$ hour without pressure, then run through a bath of tartar emetic, wash and dry.

Coloured Discharges

with oxidizing agents.

Most of the Benzidine dyestuffs can be discharged with oxidizing agents (such as chlorates etc.) but a few of them withstand the same. These can be employed for coloured discharges in dischargeable dyestuffs such as Indigo, Alizarine, Chrome, Diamond and Basic Colours. This small selection of colours withstanding the action of chlorine to a more or less degree can be used as coloured resists for the Aniline Black discharge style.

The following Benzidine colours, which entirely or partly resist oxidizing agents, are specially adapted for **coloured discharges** on Indigo, Alizarine colours fixed on chrome, Basic colours etc. **with** the aid of **oxidizing agents**; they can also be employed as discharges on Aniline Black by the ferrocyanide process:

Red Dyestuffs:

Benzo Fast Red
Brilliant Geranine B
Geranine G.

Orange Dyestuffs:

Chloramine Orange G
Congo Orange GR
Mikado Orange.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine.

Blue Dyestuffs:

Benzo Sky Blue.

Brown Dyestuffs:

All the Benzo Browns.

These Benzidine dyestuffs not affected by chlorine are also used for discharging dyed Indigo Blues:

No. 1.

Yellow Discharge.

Boil:

7 $\frac{1}{4}$ pints or 400 grms.	chlorate of soda solution
	76° Tw. (16 $\frac{1}{2}$ lbs. per gallon or 500 grms. : 300 grms. water)
{ 4 $\frac{1}{2}$ lbs. or 148 grms.	China clay
{ 1 pint " 40 "	water
{ $\frac{3}{4}$ lb. " 24 "	Chrysophenine and
5 $\frac{1}{2}$ lbs. " 180 "	British gum, and then add
10 oz. " 20 "	red prussiate of potash, and when cold add
{ 1 $\frac{1}{4}$ lbs. " 40 "	citric acid dissolved in
{ 2 $\frac{1}{2}$ pints " 100 "	water.

No. 2.

Orange Discharge.

Boil:

7 $\frac{1}{4}$ pints or 400 grms.	chlorate of soda solution
	76° Tw. (16 $\frac{1}{2}$ lbs. per gallon or 500 grms. : 300 grms. water)
{ 4 $\frac{1}{2}$ lbs. " 148 grms.	China clay
{ 1 pint " 40 "	water
{ 1 lb. " 32 "	Chloramine Orange G and
5 $\frac{1}{2}$ lbs. " 180 "	British gum, and then add
10 oz. " 20 "	red prussiate of potash, and when cold add
{ 1 $\frac{1}{4}$ lbs. " 40 "	citric acid dissolved in
{ 2 $\frac{1}{2}$ pints " 100 "	water.

Boil: **White Discharge.**

7 $\frac{1}{4}$ pints or 400 grms.	chlorate of soda
{ 4 $\frac{1}{2}$ lbs. " 148 "	China clay
{ 1 $\frac{1}{2}$ pints " 72 "	water
5 $\frac{1}{2}$ lbs. " 180 "	British gum, and then add
4 $\frac{1}{4}$ pints " 20 "	red prussiate of potash, and when cold, add
{ 1 $\frac{1}{4}$ lbs. " 40 "	citric acid dissolved in
{ 2 $\frac{1}{2}$ pints " 100 "	water.

Steam for $\frac{1}{4}$ – $\frac{1}{2}$ hour without pressure, and then wash and dry.

No. 3.

Padded with:

7 $\frac{1}{2}$ oz. or 15 grms.	Alizarine Viridine in paste
2 $\frac{1}{2}$ pints " 100 "	mucilage of tragacanth 65:1000
3 $\frac{1}{4}$ pints " 129 "	water
15 pints " 600 "	water
$\frac{1}{2}$ noggin " 6 "	acetate of chrome 32° Tw.
2 $\frac{1}{2}$ pints " 100 "	water
1 $\frac{1}{4}$ pints " 50 "	acetic acid 9° Tw. (30 %)
	1000 grms.

Printed with:

4 lbs. 11 oz. or 300 grms.	Alizarine Viridine in paste
6 $\frac{1}{2}$ pints " 620 "	acetic acid starch tragacanth thickening
3 $\frac{1}{2}$ noggs. " 80 "	acetate of chrome 32° Tw.
	1000 grms.

Boil: Discharged with:

8 $\frac{1}{4}$ oz. or 33 grms.	Chloramine Yellow
5 $\frac{1}{2}$ lbs. " 350 "	British gum
2 lbs. " 125 "	chlorate of soda and
4 $\frac{1}{8}$ pints " 332 "	water, and when luke warm add
2 $\frac{1}{2}$ oz. " 10 grms.	red prussiate of potash, and when cold add
1 $\frac{1}{2}$ pints " 150 "	citrate of soda 52° Tw.

Steam for one hour without pressure, soap wash and dry.

No. 4.

Padded with:

Dissolve:

{ 12 $\frac{1}{2}$ oz. or 25 grms.	Alizarine Bordeaux B P
	20 % in
{ 1 $\frac{1}{2}$ pints " 45 "	ammonia spc. gravity 0.950
{ $\frac{3}{4}$ nogg. " 10 "	glycerine 48° Tw.
{ 5 pints " 200 "	water, and then add
15 pints " 600 "	water
{ 13 $\frac{1}{4}$ noggs. " 20 "	acetate of chrome 32° Tw.
{ 2 $\frac{1}{2}$ pints " 100 "	water.

Boil: **Yellow Discharge.**

1 lb. or 33 grms.	Chloramine Yellow
6 lbs. " 192 "	British gum
6 $\frac{1}{4}$ pints " 247 "	water
$\frac{1}{2}$ lb. " 16 "	chlorate of potash, and
$\frac{1}{2}$ lb. " 17 "	chlorate of soda, allow to cool down a little, and then add
5 lbs. 2 oz. " 165 grms.	powdered red prussiate of potash (sifted) and when cold, add
7 pints " 330 grms.	citrate of soda 38° Tw.
	1000 grms.

Steam for 1 hour without pressure, soap for 3 mins. at 86° Fahr. wash full width, nip through, mangle and dry. The soaping, washing and squeezing must take place "open" (not in the rope) as in the latter case "marking off" is liable to occur. The goods can also be hydro-extracted.

No. 5.

Padded with:

1 $\frac{3}{4}$ oz. or	70 grms.	Brilliant Alizarine Blue D in paste
3 $\frac{3}{4}$ pints "	3000 "	water
1 $\frac{1}{4}$ pints "	1000 "	mucilage of tragacanth 65:1000
7 $\frac{1}{4}$ pints "	5770 "	water
1 $\frac{1}{4}$ noggin "	60 "	acetate of chrome 32° Tw.
3 $\frac{1}{2}$ noggs. "	100 "	hyposulphite of soda solution 80:20 water
10000 grms.		

Boil:

Discharged with:

1 lb. or	33 grms.	Geranine G
6 lbs. "	191 "	British gum
11 pints "	434 "	water
3 oz. "	6 "	chlorate of soda
3 oz. "	6 "	chlorate of potash
1 $\frac{1}{4}$ lbs. "	40 "	powdered red prussiate of potash, and when cold, add
4 $\frac{1}{4}$ noggs. "	59 grms.	citrate of soda 52° Tw.
5 pints "	231 "	starch tragacanth thicken- [ing
10000 grms.		

No. 6.

Padded with:

3lbs.2oz. or	50 grms.	Alizarine Cyanine Black G in paste
2 $\frac{1}{4}$ pints "	45 "	ammonia 0.950
1 $\frac{1}{4}$ nggs. "	10 "	glycerine 48° Tw.
8 $\frac{1}{4}$ pints "	175 "	water
2 $\frac{1}{4}$ galls. "	600 "	water
3 $\frac{1}{4}$ noggs. "	20 "	acetate of chrome 32° Tw.
5 pints "	100 "	water.
10000 grms.		

Boil:

Discharged with:

1 lb. or	33 grms.	Congo Orange G
6 lbs. "	193 "	British gum
11 pints "	435 "	water
3 $\frac{1}{4}$ oz. "	7 "	chlorate of potash
3 $\frac{1}{4}$ oz. "	7 "	chlorate of soda, and then add
1 $\frac{1}{4}$ lbs. "	40 "	powdered red prussiate of potash, and when cold add
4 $\frac{1}{4}$ noggs. "	59 grms.	citrate of soda 38° Tw.
5 pints "	226 "	starch tragacanth thicken- [ing
10000 grms.		

Striking effects can be produced by combining mordant dyestuffs and Benzidine colours which are dischargeable by chlorates.

No. 7.

Padded with:

10 oz. or	20 grms.	Alizarine Bordeaux BP 20°
1 $\frac{1}{8}$ pints "	45 "	ammonia 0.950
2 $\frac{1}{4}$ noggs. "	10 "	glycerine 48° Tw.
5 pints "	200 "	water
12 $\frac{1}{2}$ pints "	500 "	water
11 $\frac{1}{4}$ nggs. "	20 "	acetate of chrome 32° Tw.
2 $\frac{1}{4}$ pints "	100 "	water
2 $\frac{1}{4}$ oz. "	5 "	Chrysofenine
2 $\frac{1}{4}$ pints "	100 "	water
10000 grms.		

Discharged with:

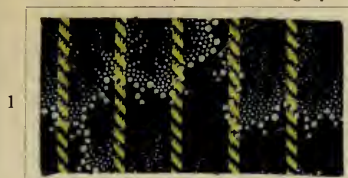
White Discharge F.		
5 lbs. or	400 grms.	British gum
18 oz. "	90 "	chlorate of soda and
3 $\frac{1}{4}$ pints "	350 "	water, and then add
2 oz. "	10 "	powdered red prussiate of potash and when cold, add
4 $\frac{1}{4}$ noggs. "	150 "	citrate of soda 52° Tw.
10000 grms.		

The process depends on Alizarine Bordeaux being discharged with chlorates, whereas Chrysofenine is not destroyed, and thus yellow figures may be produced on a brown ground.

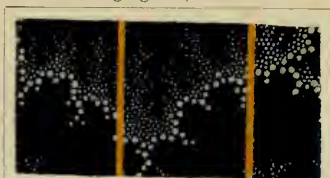
Cotton Printing.

Table 16.

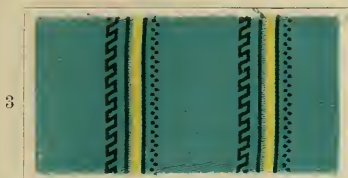
(Colour discharge printing with oxidising agents.)



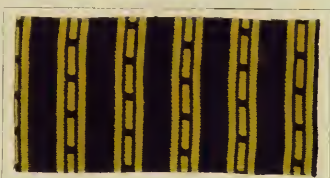
Indigo discharged with Chrysophenine.



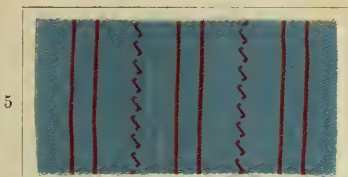
Indigo discharged with Chloramine Orange G.



Alizarine Viridine discharged with Chrysophenine.



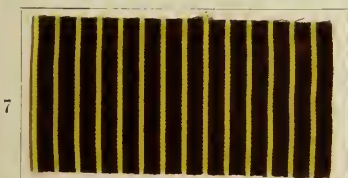
Alizarine Bordeaux BP discharged with Chloramine Yellow.



Brilliant Alizarine Blue D discharged with Geranine G.



Alizarine Cyanine Black G discharged with Congo Orange G.



Alizarine Bordeaux BP and Chrysophenine discharged with chlorate of soda.



Alizarine Bordeaux BP and Geranine G discharged with chlorate of soda.



Brilliant Alizarine Blue SP and Geranine G discharged with acetate of tin.



Aniline Black discharged with Congo Orange G.

No. 8.

Similar effects to No. 7 are obtained with Geranine G which is fairly resistant to the action of chlorine.

Padded with:

The same as in No. 7 but instead of
5 grms. Chrysophenine take
5 " **Geranine G**.

Discharged with:

White Discharge F
same as in No. 7.

Steam for 1 hour without pressure, run through a weak soap bath, wash and dry. In this way a pink on a brown ground is produced.

No. 9.

Padded with:

J	4 oz. or	40 grms.	Brilliant Alizarine Blue S P	dissolved in
{	1 pint	" 200 "		water, thickened with
J	$\frac{1}{2}$ pint	" 100 "		mucilage of tragacanth 65:1000
{	1 $\frac{1}{2}$ pint	" 300 "		water
f	1 $\frac{1}{2}$ noggs.	" 100 "		acetate of chrome 32° Tw.
{	$\frac{1}{2}$ pint	" 100 "		water, and then add
J	$\frac{1}{4}$ oz.	" 5 "	Geranine G	dissolved in
{	$\frac{1}{2}$ pint	" 95 "		water.
				1000 grms.

Discharged with:

White Discharge 11 reduced 2 and 1 page 25.

Steam for 1 hour without pressure, wash, soap slightly if requisite, wash and then dry.

If Geranine G, which is discharged by tin, is combined with Brilliant Alizarine Blue S P, which is not discharged, and then printed with acetate of tin and steamed, Geranine G alone is discharged, and the light blue of Brilliant Alizarine Blue S P remains.

Discharge Printing on Aniline Black.

No. 10.

Orange Discharge.

	15 oz. or	15 grms.	Congo Orange G	
3 $\frac{1}{4}$	pints	" 65 "		water
11 $\frac{1}{4}$	lbs.	" 180 "		zinc white
1 $\frac{1}{4}$	galls.	" 200 "		mucilage of tragacanth 65:1000
8 $\frac{1}{4}$	pints	" 220 "		gum water 1:1
1 $\frac{1}{4}$	pints	" 30 "		glycerine 48° Tw.
1 $\frac{1}{4}$	pints	" 30 "		olive oil.

Print, steam for $\frac{1}{2}$ hour, slop pad with Ferrocyanide Aniline Black, oxidise in Mather and Platt, run through a bath of silicate of soda, wash and dry.

No. 11.

The following colours can be printed on white calico and steamed for $\frac{1}{2}$ hour:

Pink Discharge.

15 oz. or	15 grms.	Geranine G
3 $\frac{3}{4}$ pints	65 "	water
11 $\frac{1}{4}$ lbs.	180 "	zinc white
11 pints	220 "	mucilage of tragacanth 65:1000
8 $\frac{3}{4}$ pints	220 "	gum water 1:1
1 $\frac{1}{4}$ pints	30 "	glycerine 48° Tw.
1 $\frac{1}{2}$ pints	30 "	olive oil

Slop pad with Ferrocyanide Aniline Black, dry, oxidise in Mather and Platt, then run through a bath of silicate of soda, wash and dry.

No. 12.

Padded with Ferrocyanide Aniline Black, dried, and then discharged with:

Boil:	Yellow Discharge.
12 oz. or	12 grms. Chloramine Yellow
15 pints	303 " water
12 $\frac{1}{2}$ pints	250 " mucilage of tragacanth 65:1000
1 $\frac{1}{2}$ galls.	250 " starch tragacanth thickening
1 $\frac{1}{4}$ lbs.	20 " phosphate of soda; when luke warm add
9 $\frac{1}{2}$ lbs.	150 " acetate of soda
2 $\frac{1}{4}$ noggs.	15 " caustic soda 66° Tw.
	1000 grms.

Steam for 5 mins. in Mather and Platt, run through a bath of silicate of soda, wash and dry.

No. 13.

Blue Discharge.

1 $\frac{1}{4}$ lbs. or	20 grms.	Benzo Sky Blue
3 pints	60 "	water
11 $\frac{1}{4}$ lbs.	180 "	zinc white
15 pints	300 "	mucilage of tragacanth 65:1000
8 $\frac{3}{4}$ pints	220 "	gum water 1:1
1 $\frac{1}{4}$ pints	30 "	glycerine 48° Tw.
1 $\frac{1}{2}$ pints	30 "	olive oil
$\frac{3}{4}$ pint	20 "	bisulphite of soda 66° Tw.

No. 14.

Red Discharge.

Boil:	Red Discharge.
2 lbs. 2 oz. or	195 grms. Benzo Purpurine 4 B
7 $\frac{3}{4}$ noggs.	155 " water
12 $\frac{1}{2}$ noggs.	250 " mucilage of tragacanth 65:1000
3 pints	250 " starch tragacanth thickening, and then add
5 oz.	20 " phosphate of soda, and when cold add
$\frac{9}{16}$ noggin	15 " caustic soda 66° Tw.
1 $\frac{1}{8}$ noggin	30 " bisulphite of soda 66° Tw.

Print on padded Aniline Black, steam for 5 mins., run through a bath of silicate of soda, wash and dry.

Aniline Black piece goods discharged with Benzidine colours are often mercerised.

No. 15.

Aniline Black discharged with
Brilliant Geranine B, Benzo Purpurine 4 B,
Chrysophenine
(Chrysophenine
(Benzo Sky Blue
and afterwards mercerised.

No. 16.

Aniline Black discharged with
Heliotrope B B
(Benzo Sky Blue
(Chloramine Yellow
and afterwards mercerised.

Discharge Printing on Basic Dyestuffs.

The Benzidine dyestuffs are sometimes used for coloured discharges on basic dyestuffs dischargeable with oxidising agents.

No. 17.

Padded with:

4% tannic acid
2% tartar emetic.

Dyed with:

0.7% Turquoise Blue B B.

Washed, dried, and printed with:

Boil: **Orange Discharge.**
3 oz. or 30 grms. Chloramine Orange G
1 $\frac{1}{4}$ pints " 250 " water
 $\frac{1}{2}$ pint " 100 " mucilage of tragacanth
65:1000
7 oz. " 70 " wheat starch; when cold
add
1 $\frac{1}{2}$ pints " 150 " White Discharge 1
 $\frac{1}{2}$ pint " 100 " albumen water 2:1
1000 grms.

Steam for $\frac{1}{4}$ hour without pressure, wash and dry.

Boil: **White Discharge I.**
14 $\frac{1}{2}$ pints or 400 grms. chlorate of soda 76° Tw.
1 8 $\frac{3}{4}$ lbs. " 140 " China clay
1 3 $\frac{3}{4}$ galls. " 120 " water
8 lbs. " 130 " British gum, when luke
warm, add
11 $\frac{1}{4}$ lbs. " 20 " red prussiate of potash
1 2 $\frac{1}{2}$ lbs. " 40 " citric acid dissolved in
1 5 pints " 100 " water

For colour discharging of Alizarines with chloride of lime, Benzidine dyestuffs which resist the action of chlorine can be used.

No. 19.

Dyed with Alizarine and printed as follows:

Dissolve: **Yellow Discharge.**
15 oz. or 150 grms. powdered tartaric acid and
1 $\frac{1}{4}$ lbs. " 200 " powdered citric acid in
1 pint " 200 " water, and add slowly
15 oz. " 150 " British gum and
5 oz. " 50 " Chloramine Yellow and
1 $\frac{1}{4}$ pints " 250 " water, then boil.
1000 grms.

Steam for 1 hour without pressure, run the goods through a solution of chloride of lime 2° Tw. at 95° Fahr. for 1 minute and wash.

No. 18.

Padded with:

2% tannic acid
1% tartar emetic.

Dyed with:

1% New Victoria Blue B.
2% alum.

Washed, dried and printed with:

Boil: **Yellow Discharge.**
3 oz. or 30 grms. Chrysophenine
1 $\frac{1}{4}$ pints " 250 " water
 $\frac{1}{2}$ pint " 100 " mucilage of tragacanth
65:1000
7 oz. " 70 " wheat starch, and then add
1 $\frac{1}{2}$ pints " 400 " White Discharge I,
see No. 17
 $\frac{3}{4}$ pint " 150 " albumen water 2:1
1000 grms.

Steam $\frac{1}{4}$ hour without pressure, wash and dry.

No. 20.

The Benzidine dyestuffs are also suitable for adding to the soda-tartar-emetie reserve, to produce coloured resist effects under basic colours.

Boil: **Yellow Resist.**
4 $\frac{1}{2}$ oz. or 18 grms. Chloramine Yellow
dissolved in
11 $\frac{3}{4}$ pints " 150 " water, with
11 $\frac{1}{2}$ pints " 532 " soda-tartar-emetie solu-
tion 106° Tw. and
4 $\frac{3}{4}$ lbs. " 300 " British gum
1000 grms.

Cover Print Blue.

15 oz. or 150 grms. Acetine Blue
2 $\frac{1}{4}$ pints " 550 " acetic acid starch traga-
canth thickening
1 $\frac{1}{4}$ pints " 300 " acetic acid tannic acid
solution 1:1
1000 grms.

Print first with yellow resist, cover print with blue, as above, steam for one hour without pressure, wash, soap for 10 mins. cold, wash and dry.

Cotton Printing.

Table 17.

(Discharge printing on Aniline Black, basic dyestuffs etc.)

11



Aniline Black discharged with Geranine G.

12



Aniline Black discharged with Chloramine Yellow.

13



Aniline Black discharged with Benzo Sky Blue.

14



Aniline Black discharged with Benzo Purpurine 4 B.

15



Aniline Black discharged with Brilliant Geranine B, Benzo Purpurine 4 B, Chrysophenine, Benzo Sky Blue and Chrysophenine Olive and afterwards mercerised.

16



Aniline Black discharged with Heliotrope B B, Benzo Sky Blue and Chloramine Yellow, and afterwards mercerised.

17



Turquoise Blue B B discharged with Chloramine Orange G.

18



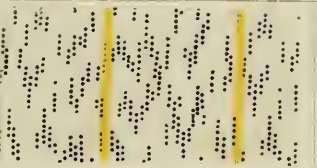
New Victoria Blue B discharged with Chrysophenine.

19



Chloramine Yellow discharged on Allzarine.

20



Chloramine Yellow resist under Acetine Blue.

Discharge Printing on Basic Dyestuffs.

The following **basic dyestuffs** dyed on a tannic acid mordant, can be discharged with **oxidising agents** (chlorates, ferricyanide of potassium etc.)

Red Dyestuffs:

Rhodamine B.

Yellow Dyestuffs:

Auramine II.

Green Dyestuffs:

Brilliant Green

Emerald Green

Imperial Green G 1

Methyl Green

Turquoise Blue G and B.B.

Blue Dyestuffs:

New Victoria Blue B

Victoria Blue B.

Violet Dyestuffs:

Methyl Violet 1 B.

Brown Dyestuffs:

Bismarck Brown M, F F, L L extra, R, F, R extra (fairly good).

No. 1.

E. Jantsch of the Cotton Manufacturing Co., Hilden, published some time ago a pamphlet treating of the practical application of discharge printing:

This firm dissolve substantive dyestuffs not affected by alkalies in an alkaline β -Naphthol solution, impregnate the cotton with this, print on a white or colour discharge (which serves both as a discharge and resist) cover print with a diazotised ice colour, steam for a short time, wash and soap. An example of this process of printing will perhaps demonstrate this more clearly:

Slop-pad flannelette with the following:

 β -Naphthol solution.

{	10½ oz. or	420 grms.	β -Naphthol
	3¼ noggs. "	740 "	caustic soda 36° Tw.
	5 pints "	4000 cc.	water
	1¼ pints "	1000 grms.	Turkey red oil
{	3 oz. "	120 "	Benzo Sky Blue dissolved in
	17½ pints "	14000 "	water.

Instead of Benzo Sky Blue, Geranine G, Congo Orange G, Benzo Olive etc. can be used
When dried the material is printed with the following:

Yellow Discharge and Resist.

2½ galls. or	500 grms.	White Discharge II	see page 25
¼ gall. "	50 "	Extract of Persian berries	52° Tw.
3 lbs. 2 oz. "	50 "	citric acid powder	
15 oz. "	15 "	tin crystals.	

and afterwards cover printed with the following:

Ice Bordeaux.

{	18 oz. or	72 grms.	hydrochloride of α -Naphthylamine in paste 45 %
	1½ pints "	117 "	water
	1½ noggs. "	36 "	hydrochloric acid 36° Tw.
	30 oz. "	120 "	ice, then add slowly
{	27½ oz. "	11,4 "	nitrite dissolved in
	1½ noggs. "	30 "	water, then filter and thicken with
	6¼ pints "	615 "	British gum water 600:1000, and finally add
	9½ oz. "	37,5 "	acetate of soda.

After cover printing steam for 5 mins. without pressure, wash, if necessary soap slightly in open state, wash and dry.

No. 2.

Muszanski recently published an interesting article on conversion effects on dyed Benzidine grounds, of which the following is an example:

Dye which 2% **Brilliant Benzo Blue 6 B**, dry, print with White Discharge, cover print with Aniline Black containing Rhodamine 6 G, steam for 2-5 mins. without pressure, wash and dry.

White Discharge.

2 $\frac{1}{4}$ pints or	23	grms. mucilage of tragacanth	65:1000
2 $\frac{1}{2}$ lbs. "	20	" tartaric acid powder	
2 pints "	20	" water	
1 lb. "	9	" carbonate of potash	
2 $\frac{1}{2}$ noggs. "	13	" caustic soda 96° Tw.	
3 $\frac{1}{2}$ pints "	34	" mucilage of tragacanth	65:1000
3 lbs. "	24	" tin crystals	
1 $\frac{1}{2}$ lbs. "	12	" soda	
2 $\frac{1}{2}$ lbs. "	20	" acetate of soda	
$\frac{1}{2}$ pint "	5	" oil of turpentine.	

Aniline Black Cover Print.

3 pints or	70	grms. Aniline Black	
		thickening	
2 oz. "	2.1	" Rhodamine 6 G	
1 $\frac{1}{8}$ noggs. "	7	" glycerine 48° Tw.	
$\frac{1}{2}$ pint "	10	" Aniline oil	
1 $\frac{3}{4}$ noggs. "	10	" hydrochloric acid	
		27° Tw.	

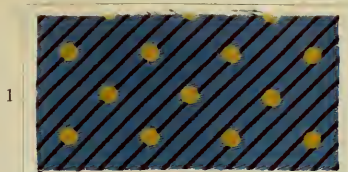
Aniline Black Thickening.

11 oz. or	22	grms. wheat starch	
3 $\frac{1}{2}$ lbs. "	110	" British gum	
5 $\frac{3}{4}$ pints "	234	" water	
4 $\frac{1}{2}$ oz. "	9	" chlorate of soda	
5 $\frac{1}{2}$ pints "	216	" water	
4 $\frac{1}{2}$ oz. "	9	" yellow prussiate of	
		potash.	

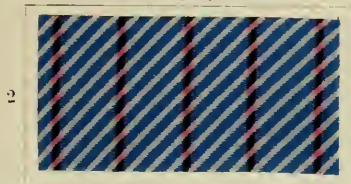
If green or yellow conversion effects are desired when working with Aniline Black cover, then add to the black print colour in place of Rhodamine 6 G, Brilliant Green or Auramine II.

Cotton Printing.
(Discharges with tin.)

Table 18.

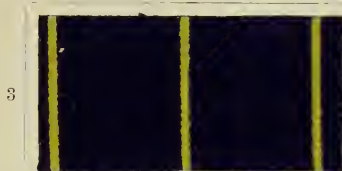


**Padded with: Beta-Naphtol, Benzo Sky Blue; Persian Berries
as a discharge and resist: cover printed with diazotised
Alpha-Naphtylamine.**

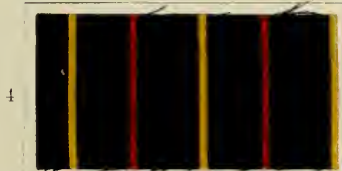


**Dyed with: Brilliant Benzo Blue 6 B;
Printed with: tin crystals discharge;
cover printed with: Aniline Black with Rhodamine 6 G.**

(Discharges with oxidising agents).



**Dyed with: 4% Benzo Blue B X;
Discharged with: chromate of lead.**



**Dyed with: 8% Diazo Black B I X (Developer II);
Discharged with: chromate of lead and Pigment Red.**



**Dyed with: 2% Brilliant Benzo Blue 6 B;
Discharged with: Pigment Red.**

Although the Benzidine Dyestuffs are mostly discharged with reducing agents, a large number of them, according to Smirnoff & Rosenthal can be discharged with oxidising agents.

The following Benzidine Dyestuffs are discharged by oxidising agents:

Red Dyestuffs:

Benzo Purpurine 4 B, 10 B
Brilliant Congo G (good)
*Brilliant Geranine B, 3 B (good)
Brilliant Purpurine R (good)
Congo
Delta Purpurine 5 B (good)
*Geranine G, B B (good)
Rose Azurine G (good).

Orange Dyestuffs:

Benzo Orange R (yellow)
Congo Orange G (yellow)
Congo Orange R (yellow)
Toluylene Orange G.

Yellow Dyestuffs:

Thiazole Yellow.

Green Dyestuffs:

Benzo Dark Green
Benzo Green G, B B
Benzo Olive.

Blue Dyestuffs:

Benzo Azurine G (good)
Benzo Azurine 3 G (good)
Benzo Black Blue G, R, 5 G
Benzo Blue 2 B, 3 B, B X, R W
Benzo Chrome Black Blue B
Benzo Cyanine B (good)
Benzo Cyanine 3 B, R
Benzo Indigo Blue
Benzo Navy Blue
Benzo Sky Blue
Brilliant Azurine B (good)
Brilliant Azurine 5 G
Brilliant Azurine 5 G (coppered)
Brilliant Benzo Blue 6 B
Brilliant Benzo Blue 6 B (coppered)
Chicago Blue B, R
Diazo Black 3 B
Diazo Black R, R extra (undiazotised).
Diazo Blue (5-Naphtol) (yellowish)
Diazo Blue Black (brownish)

Violet Dyestuffs:

Azo Violet
Azo Violet (coppered)
Benzo Violet R
Heliotrope B B.

Brown Dyestuffs:

Benzo Black Brown (yellowish)
Benzo Brown B, B R, B X, G, G G, N B,
Benzo Brown N B X, R extra
Benzo Brown 5 R (yellow)
Benzo Chrome Brown B (brown)
Benzo Chrome Brown B (coppered) (brown)
Benzo Chrome Brown G
Benzo Chrome Brown G (coppered) (brown)
Benzo Chrome Brown R (brownish)
Benzo Chrome Brown R (coppered) (brown-
Benzo Dark Brown (yellowish) [ish)
Congo Corinth G (good)
Diazo Brown G (brown)
Diazo Brown G (5-Naphtol) (brown)
Diazo Brown R extra (diazotised. Soda)
Direct Bronze Brown (yellow)
Direct Fast Brown B
Katigen Black Brown
Mikado Brown B (yellow)
Toluylene Brown B (good)
Toluylene Brown B B O (good)
Toluylene Brown M (good)
Toluylene Brown R.

Grey Dyestuffs:

Benzo Fast Grey (middling)
Benzo Fast Black (good)
Benzo Grey S extra
Diazo Blue Black (5-Naphtol)
Direct Blue Black B
Direct Deep Black T
Pluto Black B, G, R.

Black Dyestuffs (all brownish):

Diazo Black 3 B (5-Naphtol)
Diazo Black B11 N (Developer II) (fairly good)
Diazo Black R (5-Naphtol)
Diazo Black R extra (Developers A & II)
Diazo Blue Black (5-Naphtol)
Diazo Brilliant Black R, B (5-Naphtol)
Direct Blue Black B (Paranitraniline)
Direct Blue Black B, N
Direct Deep Black T
Pluto Black B, G, R.

* These can be used with weak oxidising agents for colour discharging other dyestuffs, whereas they are themselves discharged by strong oxidising agents.

No. 3.

Dyed with: 4% **Benzo Blue BX**.
Discharged with: Yellow Discharge I.

Yellow Discharge I.

5½ lbs. or 450 grms. **chromate of lead in paste**
(Siegle)
2½ pints " 300 " white discharge
2½ pints " 250 " albumen water 2:1

1000 grms.

Boil: **White Discharge.**

7¼ pints or 400 grms. chlorate of soda 76° Tw.
6 lbs. " 190 " China clay
3 pints " 120 " water
4 lbs. " 130 " British gum, and when
luke warm add
10 oz. " 20 " red prussiate of potash
1¼ lbs. " 40 " citric acid powder
2½ pints " 100 " water

1000 grms.

No. 4.

Dyed with: 8% **Diazo Black BHN**.
Diazotised with: 4 lbs. nitrite
5½ pints hydrochloric acid 30° Tw.
200 galls. water
Developed with: 4 lbs. Developer H.
Discharged with: Yellow Discharge II and
Red Discharge.

Red Discharge.

5½ lbs. or 450 grms. **Rouge vif. E. N.**
Fabrique chimique de
Thann & de Mulhouse
2½ pints " 300 " White Discharge (as above)
2½ pints " 250 " Albumen water 2:1

1000 grms.

Yellow Discharge II.

5½ lbs. or 450 grms. **chromate of lead in paste**
(Siegle)
3¾ pints " 450 " White Discharge (please
refer to No. 1)
1 pint " 100 " Albumen water 2:1

1000 grms.

Steam for ¼ hour without pressure.

No. 5.

Dyed with: 2% **Brilliant Benzo Blue 6B**.
Discharged with: Red Discharge as given in No. 4.

Mercerising.

The following Benzidine Dyestuffs are suitable for mercerising purposes:

Red Dyestuffs:

Benzo Purpurine 10 B, 4 B
Brilliant Congo G
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Congo Rubine
Delta Purpurine 5 B
Geranine G.

Orange Dyestuffs:

Benzo Orange R
Chloramine Orange G
Congo Orange G
Mikado Orange
Tolylene Orange G

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine
Direct Yellow R
Mikado Yellow G
Thiazole Yellow.
Yellow P R superfine

Blue Dyestuffs:

Benzo Black Blue G, 5 G
Benzo Chrome Black Blue B
Benzo Cyanine B, 3 B, R
Benzo Sky Blue
Brilliant Benzo Blue 6 B.

Violet Dyestuffs:

Azo Violet.

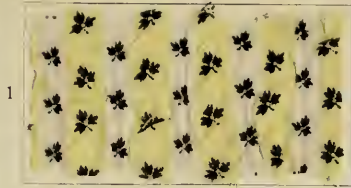
Brown Dyestuffs:

Benzo Brown B
Benzo Chrome Brown B, G, R
Chloramine Brown G
Congo Corinth G
Tolylene Brown B, M, R.

Grey Dyestuffs:

Benzo Grey S extra
Diazo Black B H N
Direct Blue Black B
Direct Deep Black T.

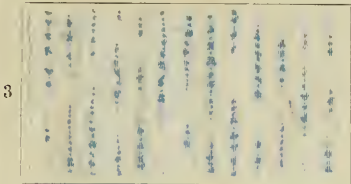
Cotton Printing.
(Mercerised Effects.)



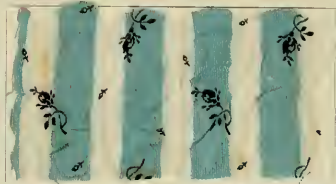
Chloramine Yellow on Aniline Black.



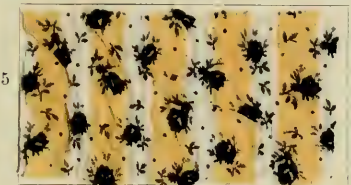
Gerauine G on Aniline Black.



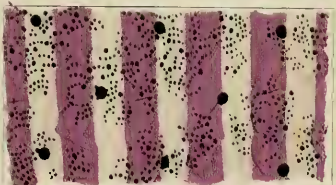
Brilliant Benzo Blue 6 B.



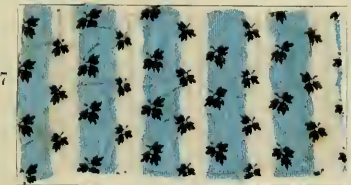
Thiazola Yellow and Brilliant Benzo Blue 6 B on Aniline Black.



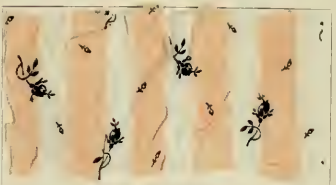
Congo Orange G on Aniline Black.



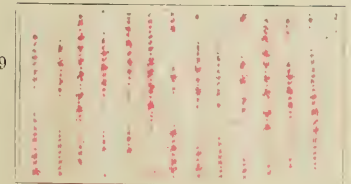
Azo Violet on Aniline Black.



Brilliant Benzo Blue 6 B on Aniline Black.



Brilliant Purpurine R on Aniline Black.



Gerauine G.



Direct Deep Black T.

The Benzidine Dyestuffs are extremely suitable for **mercerising** purposes, especially those unaffected by alkalis, or such as are temporarily altered but whose shade returns when washed.

The Benzidine Dyestuffs can be printed, as in patterns 1, 2, 4-8 and 10 in stripe patterns, the colour being dissolved in water and thickened with gum water, then dried, steamed for $1\frac{1}{4}$ - $1\frac{1}{2}$ hour without pressure, then run through caustic soda 52° Tw., washed and dried; or as in Nos. 3 and 9 with any thickening desired, then dried, steamed and cover printed in stripes with gum water, and run through caustic soda.

Directions for Printing.

$\frac{3}{4}$ -1 oz. or 5-7.5 grms.	Benzidine colour	dissolved in
$\frac{1}{2}$ pint "	75 "	water, thickened with
1 gallon "	1500 "	gum water 1:1.

Should the Benzidine colours not dissolve in the quality of water given, the solution is warmed up again with gum water; it is advisable to use only a good quality gum.

No. 1.

$\frac{3}{4}$ oz. or 5 grms. **Chloramine Yellow.**

No. 2.

1 oz. or 7.5 grms. **Geranine G.**

No. 3.

1 oz. or 7.5 grms. **Brilliant Benzo Blue 6 B.**

No. 4.

$1\frac{1}{2}$ oz. or 11.25 grms. **Thiazole Yellow**
 $\frac{1}{2}$ oz. or 3.75 grms. **Brilliant Benzo Blue 6 B**
 (1 $\frac{1}{4}$ pints or 100 grms. water.)

No. 5.

1 oz. or 7.5 grms. **Congo Orange G.**

No. 6.

1 oz. or 7.5 grms. **Azo Violet**
 (2 $\frac{1}{4}$ pints " 200 " water.)

No. 7.

1 oz. or 7.5 grms. **Brilliant Benzo Blue 6 B.**

No. 8.

1 oz. or 7.5 grms. **Brilliant Purpurine R.**

No. 9.

1 oz. or 7.5 grms. **Geranine G.**

No. 10.

1 oz. or 7.5 grms. **Direct Deep Black T.**

Printing on of thickened Caustic Soda.

As is well-known the Benzidine Dyestuffs dye and exhaust better on mercerised than on ordinary cotton. If pieces are printed with caustic soda, and then dyed with substantive colours, the printed part, which is mercerised, is dyed much darker. **Two-coloured** effects are thus obtained by means of one dyestuff and one roller. These goods can naturally be discharged white or in colours, if dischargeable dyes have been employed; they can further be diazotised and developed, treated according to requirement with sulphate of copper, bichromate of potash, or diazotised paranitraniline, or topped with basic colours etc. etc.

Directions.

Print the cotton with:

1 gallon or 1 litre caustic soda 106° Tw. thickened with
 $\frac{1}{4}$ gallon " 600 grins. gum water 1:1.

Then dry, wash and dye as given on page 22 with Benzidine dyestuffs.

No. 1.

Dyed with:

1.5 % **Brilliant Benzo Blue 6 B.**

Discharged with:

White Discharge II see page 25.

No. 2.

Dyed with:

2 % **Benzo Brown NB.**

No. 3.

Dyed with:

5 % **Direct Deep Black T.**

No. 4.

Dyed with:

2 % **Benzo Violet R.**

Discharged with:

0.5 % **Brilliant Green**
 2.5 % **Auramine G**
 25 % acetate of tin 28" Tw.
 7.5 % tannic acid
 2 % citric acid.

No. 5.

Dyed with:

2 % **Benzo Chrome Brown G**
 and after-treated for $\frac{1}{4}$ hour
 with 3 % sulphate of copper and
 2 % bichromate of potash.

No. 6.

Dyed with:

1 % **Brilliant Geranine B.**

No. 7.

Dyed with:

3% **Benzo Purpurine 4 B.**

Discharged with:

- 9% Extract of Persian berries 52° Tw.
- 9.8% tin crystals
- 24.4% acetate of tin 28° Tw.
- 2.4% citric acid.

No. 9.

Dyed with:

1% **Benzo Fast Black.**

Discharged with:

- 3% **Rhodamine 6 G**
- 25% acetate of tin 28° Tw.
- 7.5% tannic acid
- 2% citric acid.

No. 8.

Dyed with:

3% **Benzo Nitrol Brown G**

developed with diazotised Paranitraniline.

No. 10.

Dyed with:

3% **Congo Orange G.**

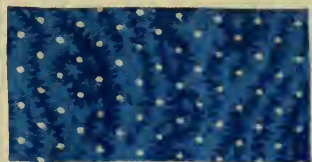
The white discharge patterns were steamed for 5 mins. without pressure and then washed.

The colour discharge patterns printed with basic colours were steamed for 10 mins. without pressure, and were then run through a lukewarm tartar emetic bath and afterwards washed; the Persian Berry Yellow Discharge pattern was steamed for 10 mins. without pressure and afterwards washed.

Cotton Printing.

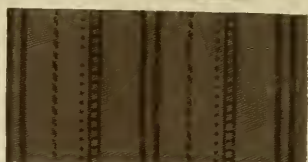
Table 20

(Printed with thickened caustic soda).



1

Dyed with: 1.5% Brilliant Benzo Blue 6B
discharged with acetate of tin.



2

Dyed with: 2% Benzo Brown NB.



3

Dyed with: 5% Direct Deep Black T.



4

Dyed with: 2% Benzo Violet B;
discharged with: Brilliant Green and
Auramine G.



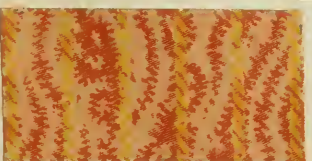
5

Dyed with: 2% Benzo Chrome Brown G,
coppered and chromed.



6

Dyed with: 1% Brilliant Geranine R.



7

Dyed with: 3% Benzo Purpurine 4B,
discharged with Persian Berry Yellow.



8

Dyed with: 3% Benzo Nitrol Brown G,
developed with diazotised
Paranitraniline.



9

Dyed with: 1% Benzo Fast Black;
discharged with: 3% Rhodamine 6G.



10

Dyed with: 3% Congo Orange G.

Zinc White Printing.

Goods first dyed with Benzidine dyestuffs and afterwards printed can be employed in some cases for printing with zinc white, viscose, tungstate of soda (then run through chloride of barium solution [Opaline effects]) etc.

Nos. 1-4 were printed with zinc white as follows:

<p style="text-align: center;">No. 1.</p> <p>Dyed with: 1% Benzo Sky Blue.</p> <p>Printed with: zinc white.</p>	<p style="text-align: center;">No. 2.</p> <p>Dyed with: 0.5% Brilliant Geranine B.</p> <p>Printed with: zinc white.</p>
<p style="text-align: center;">No. 3.</p> <p>Dyed with: 5% Benzo Purpurine 4 B.</p> <p>Printed with: zinc white.</p>	<p style="text-align: center;">No. 4.</p> <p>Dyed with: 6% Benzo Chrome Black Blue B.</p> <p>Printed with: zinc white.</p>

Zinc White Recipe.

7 lbs. or 450 grms.	zinc white	
$\frac{1}{2}$ pint	" 50 "	glycerine 48" Tw.
$\frac{1}{2}$ gallon	" 333 "	egg albumen water 1:1
$3\frac{1}{2}$ noggs.	" 67 "	water
$3\frac{3}{4}$ "	" 75 "	olive oil
$2\frac{1}{2}$ "	" 50 "	oil of turpentine.
1025 grms.		

Steam for $\frac{1}{4}$ hour without pressure.

Nos. 5-10.

Benzidine dyestuffs printed with zinc white, viscose etc.

Cotton Printing.
(Printed with zinc white, viscose etc.)

Table 21.



**Dyed with: 1% Benzo Sky Blue;
Printed with: zinc white.**



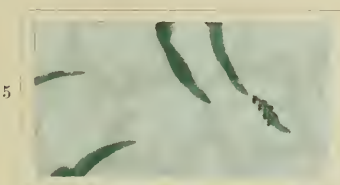
**Dyed with: 0.5% Brilliant Geranine B;
Printed with: zinc white.**



**Dyed with: 5% Benzo Purpurine 4 B;
Printed with: zinc white.**



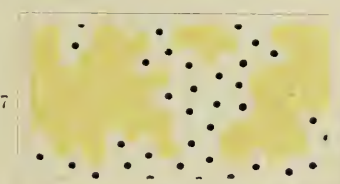
**Dyed with: 6% Benzo Chrome Black
Blue B; Printed with: zinc white.**



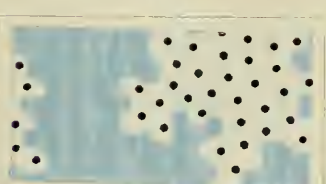
Benzo Sky Blue.



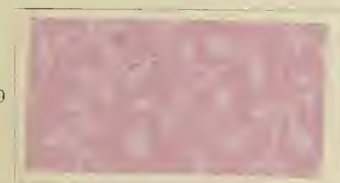
Heliotrope B B.



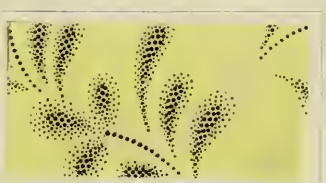
Chloramine Yellow.



Benzo Sky Blue.



Heliotrope B B.



Chloramine Yellow (shaded).

Linings.

Cotton linings are often padded on the slop padding machine instead of dyeing in a beck or jig.

Slop-pad and dry:

No. 1.

4 oz. or 22 grms. **Benzo Chrome Brown B**
 1 oz. " 55 " **Benzo Chrome Brown G**
 $\frac{3}{16}$ oz. " 1 " **Chloramine Yellow**
 9 oz. " 50 " phosphate of soda
 25 galls. " 22 litres water.

No. 2.

$1\frac{1}{8}$ oz. or 6 grms. **Chloramine Yellow**
 $1\frac{1}{8}$ oz. " 6 " **Benzo Chrome Brown B**
 $1\frac{1}{8}$ oz. " 45 " **Benzo Chrome Brown G**
 12 oz. " 50 " phosphate of soda
 39 galls. " 22 litres water.

No. 3.

$\frac{3}{4}$ oz. or 7.2 grms. **Direct Deep Black G**
 $\frac{1}{4}$ oz. " 24 " **Benzo Chrome Brown G**
 5 oz. " 50 " phosphate of soda
 13 $\frac{1}{2}$ galls. " 20.8 litres water.

No. 4.

$\frac{3}{8}$ oz. or 3 grms. **Chloramine Yellow**
 $\frac{1}{4}$ oz. " 2 " **Benzo Chrome Brown B**
 6 oz. " 50 " phosphate of soda
 19 $\frac{1}{2}$ galls. " 22 litres water.

No. 5.

1 oz. or 10 grms. **Chloramine Yellow**
 $\frac{1}{4}$ oz. " 5 " **Benzo Chrome Brown G**
 5 oz. " 50 " phosphate of soda
 13 $\frac{1}{4}$ galls. " 22 litres water.

No. 6.

$\frac{1}{8}$ oz. or 6 grms. **Chloramine Yellow**
 $\frac{1}{2}$ oz. " 6 " **Benzo Chrome Brown B**
 $\frac{3}{8}$ oz. " 45 " **Benzo Chrome Brown G**
 $\frac{1}{4}$ oz. " 3 " **Direct Deep Black G**
 4 oz. " 50 " phosphate of soda
 11 $\frac{1}{2}$ galls. " 22 litres water.

No. 7.

10 oz. or 40 grms. **Chloramine Yellow**
 15 oz. " 60 " **Benzo Chrome Brown B**
 5 oz. " 20 " **Benzo Chrome Brown G**
 3 oz. " 12 " **Direct Deep Black G**
 5 oz. " 20 " phosphate of soda
 31 $\frac{1}{4}$ galls. " 20 litres water.

Indigo padded with:

No. 1.

2 lbs. or 1 kilo **Chloramine Yellow**
 $3\frac{1}{4}$ oz. " 100 grms. phosphate of soda
 20 galls. " 100 litres water.

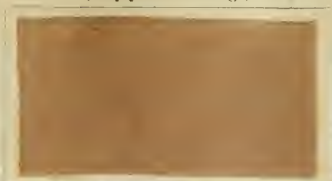
No. 2.

4 lbs. or 2 kilos **Brilliant Geranine B**
 $3\frac{1}{4}$ oz. " 100 grms. common salt
 20 galls. " 100 litres water.

Cotton Printing.
(Slop-padded linings).

Table 22.

1



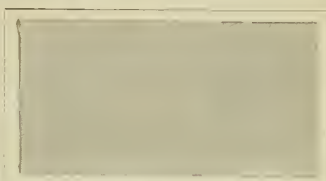
Benzo Chrome Brown B, Benzo Chrome Brown G, Chloramine Yellow.

2



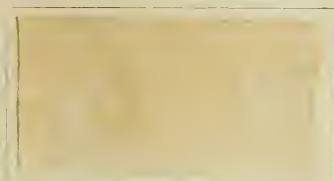
Chloramine Yellow, Benzo Chrome Brown B, Benzo Chrome Brown G.

3



Direct Deep Black G, Benzo Chrome Brown G.

4



Chloramine Yellow, Benzo Chrome Brown G.

5



Chloramine Yellow, Benzo Chrome Brown G.

6



Chloramine Yellow, Benzo Chrome Brown B, Benzo Chrome Brown G, Direct Deep Black G.

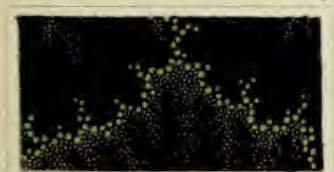
7



Chloramine Yellow, Direct Deep Black G, Benzo Chrome Brown B, Benzo Chrome Brown G.

(Indigo padded).

1



Discharged Indigo padded with Chloramine Yellow.

2



Discharged Indigo padded with Brilliant Geranine B.

The following **Benzidine dyestuffs** are **unaffected by acid** (when spotted with acetic acid).

Red Dyestuffs:

Benzo Purpurine 1 B (slightly affected)
Brilliant Congo (scarcely affected)
Brilliant Geranine B, 3 B
Delta Purpurine 5 B, 7 B (slightly affected)
Geranine G, BB
Red PR
Rose Azurine B, G (slightly affected)

Orange Dyestuffs:

Chloramine Orange G (scarcely affected)
Congo Orange R, G
Mikado Orange
Tolylene Orange G

Yellow Dyestuffs:

Chloramine Yellow
Chrysamine
Chrysophenine
Direct Yellow R
Mikado Yellow
Yellow PR

Green Dyestuffs:

Benzo Green BB, G,
Benzo Olive (scarcely affected)

Blue Dyestuffs:

Benzo Azurine G, 3 G
Benzo Blue RW, BX, 2 B, 3 B
Benzo Chrome Black Blue B
Benzo Cyanine B, 3 B, R
Benzo Indigo Blue
Benzo Navy Blue B
Benzo Sky Blue
Benzo Black Blue G, 5 G, R
Brilliant Azurine B, 5 G
Brilliant Benzo Blue 6 B
Dialo Blue, 3 R ($\frac{5}{2}$ -Naphthol)
Dialo Blue Black
Dialo Indigo Blue ($\frac{5}{2}$ -Naphthol) (scarcely affected)
Dialo Black B, R, R extra

Violet Dyestuffs:

Azo Violet (coppered)
Benzo Violet R
Dialo Violet ($\frac{5}{2}$ -Naphthol)
Heliotrope BB

Brown Dyestuffs:

Benzo Brown B, BR, BX
Benzo Nitrol Brown G, 2 R (Paranitraniline)
Benzo Black Brown
Chloramine Brown G
Dialo Brown G
Dialo Brown G ($\frac{5}{2}$ -Naphthol)
Mikado Brown B
Tolylene Brown B

Grey Dyestuffs:

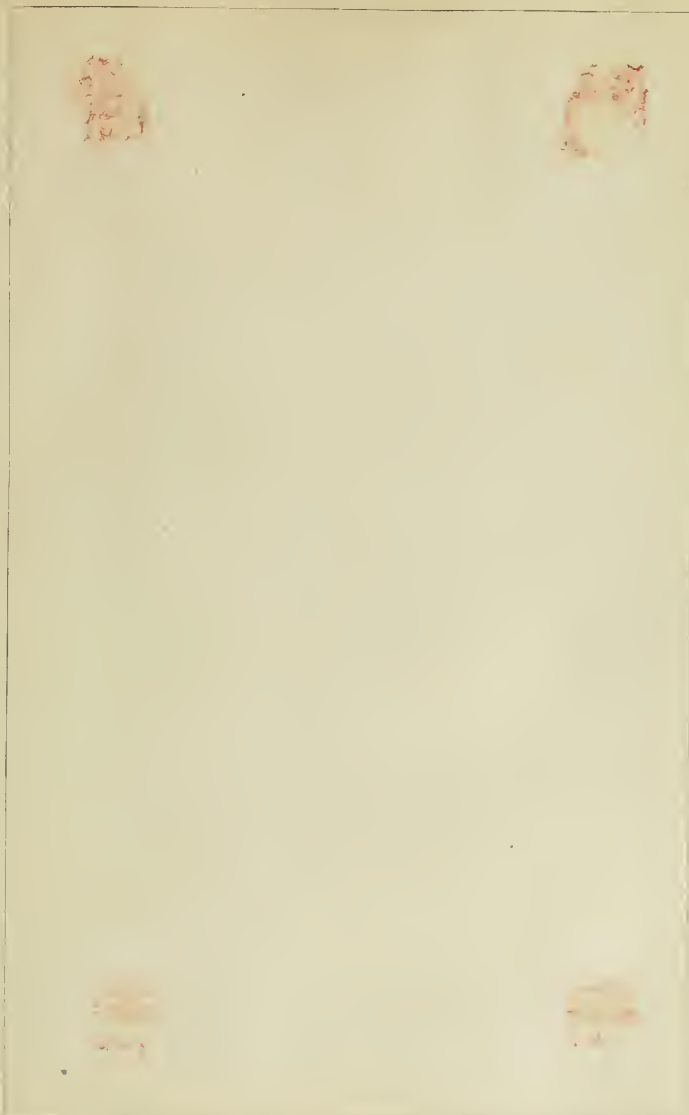
Benzo Fast Grey (scarcely affected)
Benzo Fast Black
Dialo Blue Black ($\frac{5}{2}$ -Naphthol)
Direct Blue Black B
Direct Deep Black T
Pluto Black B, R, G

Black Dyestuffs:

Benzo Chrome Black X
Dialo Black 3 B ($\frac{5}{2}$ -Naphthol) R extra
(Developer A & H)
Direct Blue Black B, X
Direct Deep Black G, R, T, RW, E, E extra
Pluto Black B, G, R,

Cotton Printing.
(Finishing).

Table 23.



Dyed with: Alizarine Red S X X 20%; finished with: Chrysamine G.

FARBENFABRIKEN vorm. FRIEDR. BAYER & Co., ELBERFELD.

The following **Benzidine** dyestuffs are unaffected by **alkalies** (when spotted with ammonia etc.):

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B, 6 B, 10 B
Brilliant Congo G, R
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Congo Red
Delta Purpurine 5 B
Geranine G
Red PR
Rose Azurine G.

Orange Dyestuffs:

Chloramine Orange G
Congo Orange G, R
Mikado Orange G
Toluylene Orange G.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine
Direct Yellow R
Mikado Yellow G
Yellow PR.

Green Dyestuffs:

Benzo Green G, B B.

Blue Dyestuffs:

Benzo Blue B X, 2 B, 3 B, RW
Benzo Chrome Black Blue B
Benzo Cyanine B, 2 B, 3 B, R
Benzo Indigo Blue
Benzo Navy Blue B
Benzo Sky Blue
Benzo Black Blue G, 5 G, R
Brilliant Benzo Blue 6 B
Chicago Blue B, R
Diazo Blue Black
Diazo Dark Blue 3 B ($\frac{5}{2}$ -Naphтол)
Diazo Black B, R, R extra.

Violet Dyestuffs:

Diazo Violet ($\frac{5}{2}$ -Naphтол)
Heliotrope.

Brown Dyestuffs:

Benzo Brown B, G, 5 R
Benzo Chrome Brown R
Benzo Nitrol Brown G (Paranitraniline)
Benzo Black Brown
Chloramine Brown G
Congo Corinth G
Congo Rubine
Diazo Brown G
Diazo Brown R extra (diazotised and developed with soda)
Direct Bronze Brown
Direct Fast Brown B, G G
Mikado Brown B
Toluylene Brown B, B B O, M, R.

Grey Dyestuffs:

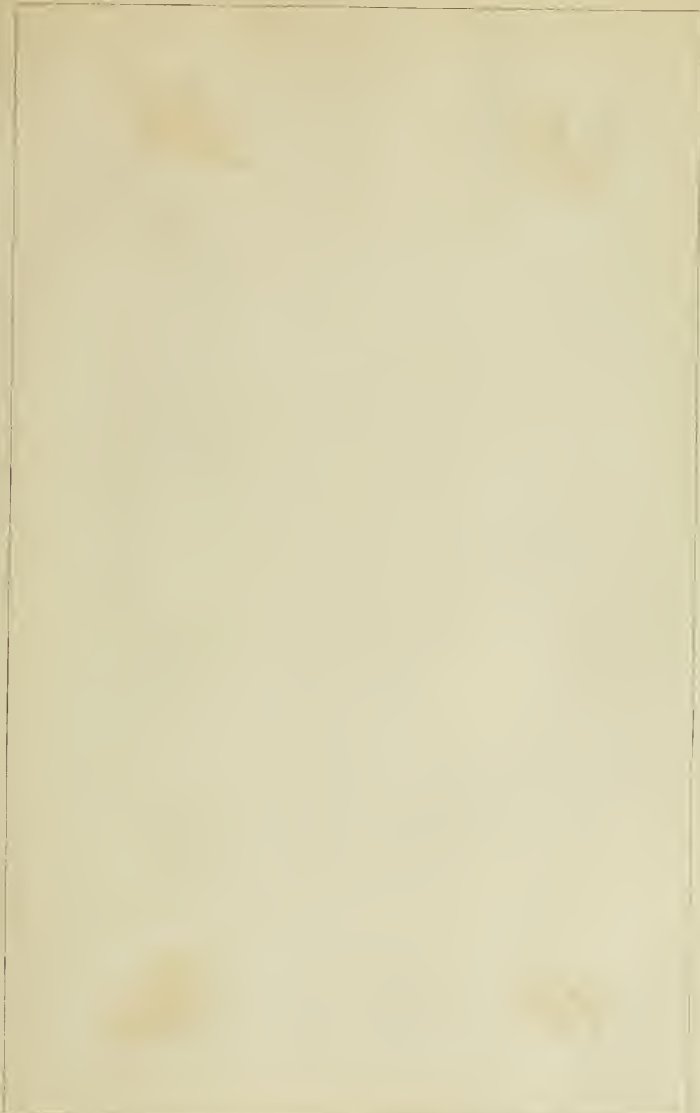
Benzo Fast Black
Pluto Black G.

Black Dyestuffs:

Benzo Fast Black
Benzo Black S extra
Diazo Blue Black ($\frac{5}{2}$ -Naphтол)
Diazo Brilliant Black ($\frac{5}{2}$ -Naphтол)
Diazo Black B, R, R extra, 3 B, B 11 N ($\frac{5}{2}$ -Naphтол)
Direct Blue Black B, N
Direct Deep Black G, R, T, E, E extra
Pluto Black B G, R.

Cotton Printing.
(Finishing).

Table 24.



Printed with Steam Colours: finished with Chrysamine G.

FARBENFABRIKEN vorm. FRIEDR. BAYER & Co., ELBERFELD.

The following **Benzidine Dyestuffs** are unchanged when ironed.

Red Dyestuffs:

Benzo Purpurine 4B
Geranine G, BB
Red PR.

Orange Dyestuffs:

Chloramine Orange G
Congo Orange R, G
Mikado Orange G
Toluylene Orange G.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine.

Green Dyestuffs:

Benzo Olive.

Blue Dyestuffs:

Benzo Blue 3B, RW
Benzo Chrome Black Blue B
Benzo Cyanine B, 3B, R
Benzo Indigo Blue
Benzo Sky Blue
Benzo Black Blue 5G
Brilliant Azurine 5G
Brilliant Benzo Blue 6B
Chicago Blue B, R
Diazo Blue Black
Diazo Dark Blue 3B ($\frac{5}{5}$ -Naphtol)
Diazo Indigo Blue ($\frac{5}{5}$ -Naphtol)
Diazo Black B, R, R extra.

Brown Dyestuffs:

Benzo Brown B, BR, BX, G, GG, R extra, 5R
Benzo Nitrol Brown (Paranitraniline)
Benzo Black Brown
Chloramine Brown G
Diazo Brown G
Diazo Brown G ($\frac{5}{5}$ -Naphtol) Paranitraniline)
Mikado Brown B.

Grey Dyestuffs:

Benzo Fast Grey
Benzo Fast Black.

Black Dyestuffs:

Benzo Chrome Black N
Benzo Fast Black
Diazo Blue Black ($\frac{5}{5}$ -Naphtol)
Diazo Brilliant Black ($\frac{5}{5}$ -Naphtol)
Diazo Black B, 3B, BH N, R, R extra
($\frac{5}{5}$ -Naphtol)
Direct Blue Black B, N
Direct Deep Black T, E
Pluto Black B, G, R.

The following **Benzidine Dyestuffs** are fast to **chlorine**:

Red Dyestuffs:

Brilliant Geranine B, 3 B (middling)
Geranine G, B B (middling)

Orange Dyestuffs:

Chloramine Orange G
Congo Orange G, R (to a certain extent)
Mikado Orange G.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine
Direct Yellow R
Mikado Yellow G.

Brown Dyestuffs:

Chloramine Brown G.

Of the **Benzidine Dyestuffs** the following are the **fastest to light** :

Red Dyestuffs:

Brilliant Geranine B, 3 B
Geranine G, B B.

Orange Dyestuffs:

Chloramine Orange G
Mikado Orange.

Yellow Dyestuffs:

Chloramine Yellow
Chrysamine
Chrysophenine
Mikado Yellow.

Green Dyestuffs:

Benzo Olive.

Blue Dyestuffs:

Benzo Azurine G, 3 G, R (coppered)
Benzo Blue KW (coppered)
Benzo Chrome Black Blue B
Benzo Indigo Blue
Benzo Black Blue G, 5 G, R
Benzo Navy Blue B
Brilliant Azurine 5 G (coppered)
Brilliant Benzo Blue 6 B (coppered).

Brown Dyestuffs:

Benzo Chrome Brown (chromed and coppered)
Chloramine Brown G.

Grey Dyestuffs:

Benzo Fast Black.

Of the **Benzidine Dyestuffs** the following are suitable for cotton yarn printing:

Red Dyestuffs:

Benzo Purpurine 4B
Geranine G.

Orange Dyestuffs:

Benzo Orange R.

Yellow Dyestuffs:

Chloramine Yellow.

Blue Dyestuffs:

Benzo Blue
Benzo Sky Blue.

Direct Yarn Printing.

No. 1.		No. 2.	
Boil:	Blue.	Boil:	Red.
	6 oz. or 30 grms. Benzo Sky Blue		4 oz. or 20 grms. Geranine G
	3 $\frac{3}{4}$ lbs. " 300 " British gum and		3 $\frac{3}{4}$ lbs. " 300 " British gum and
	6 $\frac{3}{4}$ pints " 670 " water		6 $\frac{3}{4}$ pints " 680 " water
	1000 grms.		1000 grms.

Steam for 1 hour without pressure.

Discharge Printing With Tin On Yarn.

The Benzidine colours when dyed on cotton yarn can be discharged white or coloured with tin in exactly the same way as when dyed on piece goods. (See page 24—37.)

Boil:		Tin Crystals Discharge.	
	5 $\frac{1}{4}$ pints or 420 grms.		water
	$\frac{3}{4}$ lb. " 50 "		wheat starch
	3 $\frac{1}{4}$ pints " 300 "		acetate of tin 32" Tw.
	1 $\frac{3}{4}$ pints " 180 "		gum water 1:1
	5 oz. " 20 "		tin crystals, and when cold
			add
	7 $\frac{1}{4}$ oz. " 30 "		citric acid
	1000 grms.		

Steam for 2—5 mins. without pressure, wash and dry.

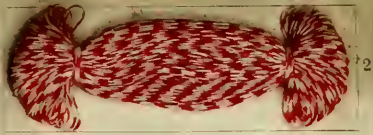
Cotton Yarn Printing.

Table 25.

(Direct Printing).



Printed with: 3% Benzo Sky Blue.



Printed with: 2% Geranine G.

(Discharge Printing with tin.)



Dyed with: 3% Congo Orange G;
discharged with: tin crystals discharge.



Dyed with: 4% Benzo Purpurine 4 B;
discharged with: tin crystals discharge.



Dyed with: 5% Benzo Violet R;
discharged with: tin crystals discharge.



Dyed with: 1% Benzo Fast Black;
discharged with: tin crystals discharge.



Dyed with: 1% Geranine G;
discharged with: tin crystals discharge.

Colour Discharge Printing With Tin.

No. 1.

Dyed with: 6% **Benzo Chrome Black Blue B**
 Discharged with: 4% **Auramine G**
 method same as in No. 6.

No. 2.

Dyed with: 3% **Benzo Chrome Brown G**
 Discharged with: 1% **Methyl Violet 6 B**
 method same as in No. 6.

No. 3.

Dyed with: 4% **Benzo Blue B X**
 Discharged with: 3% **Rhodamine 6 G**.

No. 4.

Dyed with: 2% **Brilliant Benzo Blue 6 B**
 Discharged with: 3% **Auramine II**.

Red Discharge.

{	6 oz. or 30 grms.	Rhodamine 6 G	
{	3 pints "	200 "	water
2½	pints "	300 "	acetic acid 9° Tw. (30%)
1	pint "	100 "	mucilage of tragacanth 65:1000
3½	noggs. "	100 "	acetate of tin 32° Tw.
1½	pints "	180 "	acetic acid tannic acid solution 1:1
		1000 grms.	

Yellow Discharge.

{	6 oz. or 30 grms.	Auramine II	
{	3 pints "	200 "	water
2½	pints "	300 "	acetic acid 9° Tw. (30%)
1	pint "	100 "	mucilage of tragacanth 65:1000
3½	noggs. "	100 "	acetate of tin 32° Tw.
1½	pints "	180 "	acetic acid tannic acid solution 1:1
		1000 grms.	

No. 5.

Dyed with: 8% **Pluto Black B**
 Discharged with: 4% **Auramine G**
 method same as in No. 6.

No. 6.

Dyed with: 3% **Benzo Chrome Brown B**
 Discharged with: 0.5% **Brilliant Green crystals**
 2.5% **Auramine G**.

Green Discharge.

{	1 oz. or 5 grms.	Brilliant Green crystals	
{	5 oz. "	25 "	Auramine G
2½	pints "	280 "	water
2½	pints "	300 "	acetic acid 9° Tw. (30%)
1	pint "	100 "	mucilage of tragacanth 65:1000
3½	noggs. "	100 "	acetate of tin 32° Tw.
2	oz. "	40 "	tin crystals
1½	pints "	180 "	acetic acid tannic acid solution 1:1
		1000 grms.	

Steam for 2-5 mins. without pressure, run through a cold bath of tartar emetic, wash and dry.

Cotton Yarn Printing.

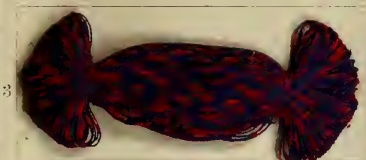
(Colour discharges with tin.)



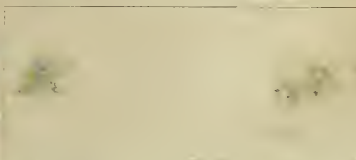
1 Dyed with: 6% Benzo Chrome Black Blue B;
Discharged with: 4% Auramine G.



2 Dyed with: 3% Benzo Chrome Brown G;
Discharged with: 1% Methyl-Violet 6 B.



3 Dyed with: 4% Benzo Blue BX;
Discharged with: 3% Rhodamine 6 G.



4 Dyed with: 2% Brilliant Benzo Blue 6 B;
Discharged with: 3% Auramine 11.



5 Dyed with: 8% Pluto Black B;
Discharged with: 4% Auramine G.



6 Dyed with: 3% Benzo Chrome Brown B;
Discharged with: 1/2% Brilliant Green
crystals and 2 1/2% Auramine G.

(Printing with caustic soda and afterwards dyeing).



7 Printed with: Caustic Soda;
Dyed with: 2% Benzo Green G.



8 Printed with: Caustic Soda;
Dyed with: 2% Brilliant Benzo Blue 6 B.



9 Printed with: Caustic Soda;
Dyed with: 3% Benzo Purpurine 4 B.



10 Printed with: Caustic Soda;
Dyed with: 2% Brilliant Geranine B.

Printing Caustic Soda on Cotton Yarn.

By printing caustic soda on cotton yarn and then dyeing with Benzidine Colours similar effects as on cotton pieces (see page 63) are obtained since the mercerised cotton dyes darker than the part not printed.

Print with:

8 $\frac{1}{4}$ pints or 1000 grms. Caustic soda 106 $\frac{1}{4}$ ° Tw. thickened with:

1 pint " 100 " gum water 1:1,

dry, wash in running water and dye as mentioned on page 63.

No. 7.

2% Benzo Green G.

No. 8.

2% Brilliant Benzo Blue 6 B.

No. 9.

3% Benzo Purpurine 4 B

No. 10.

2% Brilliant Geranine B.

Wool Printing.

The following Benzidine Colours can be printed on wool stuffs and yarns:

Red Dyestuffs:

Benzo Purpurine 1 B
Brilliant Geranine B, 3 B
Delta Purpurine 5 B
Geranine G
Rose Azurine B.

Orange Dyestuffs:

Benzo Orange R
Congo Orange G

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine.

Blue Dyestuffs:

Benzo Azurine G
Benzo Blue 2 B, 3 B
Benzo Sky Blue.

Brown Dyestuffs:

Heliotrope B B (Bordeaux).

Wool Stuff Printing.

The Benzidine Dyestuffs are also adapted for printing chlorinated wool stuffs.

No. 1.

Boil:

4 oz. or 20 grms. **Geranine G**
 3³/₄ lbs. " 300 " British gum
 6¹/₂ pints " 650 " water, and then add
 4 oz. " 20 " phosphate of potash
 1000 grms.

No. 2.

4 oz. or 20 grms. **Benzo Orange R**
 the other components same as in No. 1.

No. 3.

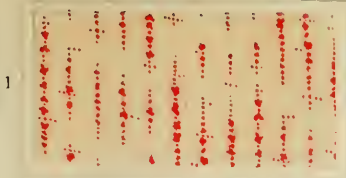
4 oz. or 20 grms. **Benzo Sky Blue**
 the other components same as in No. 1.

No. 4.

4 oz. or 20 grms. **Benzo Purpurine 4B**
 the other components same as in No. 1.

Steam for 1 hour without pressure, wash and dry.

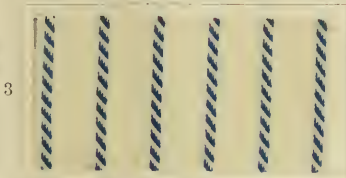
Wool Printing.
(Wool stuff.)



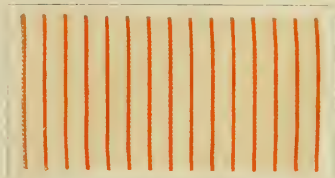
Wool printed with: 2% Geranine G.



Wool printed with: 2% Benzo Orange R.



Wool printed with:
2% Benzo Sky Blue.



Wool printed with:
2% Benzo Purpurine 4 B.

(Wool Yarn Printing.)

(Slubbing Printing.)



Printed with: 3% Congo Orange G.



Benzo Purpurine 4 B.



Printed with: 3% Chrysophenine.



Chrysophenine



Printed with: 3% Geranine G.



Brilliant Sulphon Azarine R.

Wool Yarn Printing.

Print the colour on chlorinated wool yarn, steam moist for 1 hour without pressure, wash and dry.

No. 1.

f	6 oz. or 30 grms	Congo Orange G
{	$\frac{1}{4}$ gallon "	200 " water
	$7\frac{1}{2}$ pints "	750 " flour thickening
	1 noggin "	20 " acetic acid 9° Tw.
	<u>1000 grms.</u>	(30%)

No. 2.

f	6 oz. or 30 grms.	Chrysophenine
{	$\frac{1}{4}$ gallon "	200 " water
	$7\frac{1}{2}$ pints "	750 " flour thickening
	1 noggin "	20 " acetic acid 9° Tw.
	<u>1000 grms.</u>	(30%)

No. 3.

f	6 oz. or 30 grms.	Geranine G
{	$\frac{1}{4}$ gallon "	200 " water
	$7\frac{1}{2}$ pints "	750 " flour thickening
	1 noggin "	20 " acetic acid 9° Tw.
	<u>1000 grms.</u>	(30%)

Flour Thickening.

	10 lbs. or 100 grms.	flour
	$9\frac{1}{4}$ gallons "	950 " water.

Table 27.

Slubbing Printing.

The Benzidine Dyestuffs have found considerable application in slubbing printing.

No. 1.

Boil:	Benzo Purpurine 4 B.
	10 oz. or 50 grms. Benzo Purpurine 4 B
	$3\frac{3}{4}$ lbs. " 300 " British gum
	$6\frac{1}{2}$ pints " 650 " water
	<u>1000 grms.</u>

No. 2.

Boil:	Chrysophenine.
	6 oz. or 30 grms. Chrysophenine
	$3\frac{3}{4}$ lbs. " 300 " British gum and
	$6\frac{3}{4}$ pints " 670 " water
	<u>1000 grms.</u>

No. 3.

Boil:	Brilliant Sulphon Azurine R.
	6 oz. or 30 grms. Brilliant Sulphon Azurine R
	in paste
	$3\frac{3}{4}$ lbs. " 300 " British gum and
	$5\frac{3}{4}$ pints " 570 " water, and then add
	1 pint " 100 " acetate of ammonia
	<u>1000 grms.</u>

The following **Benzidine Dyestuffs** are adapted for **slubbing printing** :

Red Dyestuffs:

Benzo Purpurine 4 B
Brilliant Congo R
Brilliant Geranine B
Delta Purpurine 5 B
Geranine G, B B.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine
Curcumine W, S.

Green Dyestuffs:

Benzo Green G.

Blue Dyestuffs:

Brilliant Sulphon Azurine R
Sulphon Azurine D.

Brown Dyestuffs:

Chloramine Brown G.

No. 4.

Boil:	Brilliant Geranine B.
6 oz. or 30 grms.	Brilliant Geranine B
3 $\frac{3}{4}$ lbs. "	300 " British gum and
4 $\frac{3}{4}$ pints "	470 " water and add
$\frac{1}{2}$ pint "	70 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
f 6 oz. "	30 " chrome alum dissolved in
l 1 pint "	100 " water
	1000 grms.

No. 6.

Boil:	Chloramine Brown G.
8 oz. or 40 grms.	Chloramine Brown G
3 $\frac{3}{4}$ lbs. "	300 " British gum and
5 $\frac{1}{2}$ pints "	590 " water, then add
$\frac{1}{2}$ pint "	70 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	1000 grms.

No. 8.

Boil:	Brilliant Congo R.
10 oz. or 50 grms.	Brilliant Congo R
3 $\frac{3}{4}$ lbs. "	300 " British gum and
6 $\frac{1}{2}$ pints "	650 " water
	1000 grms.

No. 10.

Boil:	Curcumine S.
12 oz. or 60 grms.	Curcumine S
3 $\frac{3}{4}$ lbs. "	300 " British gum and
5 $\frac{1}{2}$ pints "	580 " water, then add
$\frac{1}{2}$ pint "	60 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	1000 grms.

No. 12.

Boil:	Congo Orange G.
6 oz. or 30 grms.	Congo Orange G
3 $\frac{3}{4}$ lbs. "	300 " British gum and
6 pints "	600 " water, then add
$\frac{1}{2}$ pint "	70 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	1000 grms.

No. 5.

Boil:	Benzo Green G.
10 oz. or 50 grms.	Benzo Green G
3 lbs. 2 oz. "	250 " British gum and
6 pints "	600 " water, and add
1 pint "	100 " acetate of ammonia
	1000 grms.

No. 7.

Boil:	Chloramine Yellow.
8 oz. or 40 grms.	Chloramine Yellow
3 $\frac{3}{4}$ lbs. "	300 " British gum and
6 pints "	600 " water, then add
$\frac{1}{2}$ pint "	60 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	1000 grms.

No. 9.

Boil:	Sulphon Azurine D.
10 oz. or 50 grms.	Sulphon Azurine D
3 $\frac{3}{4}$ lbs. "	300 " British gum and
5 $\frac{1}{2}$ pints "	550 " water, and then add
1 pint "	100 " acetate of ammonia
	1000 grms.

No. 11.

Boil:	Geranine G.
6 oz. or 30 grms.	Geranine G
3 $\frac{3}{4}$ lbs. "	300 " British gum and
4 $\frac{3}{4}$ pints "	470 " water, then add
$\frac{1}{2}$ pint "	70 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	and when cold add
f 6 oz. "	30 " chrome alum dissolved in
l 1 pint "	100 " water
	1000 grms.

No. 13.

Boil:	Curcumine W.
8 oz. or 40 grms.	Curcumine W
3 $\frac{3}{4}$ lbs. "	300 " British gum and
6 pints "	600 " water, then add
$\frac{1}{2}$ pint "	60 " acetic acid 9 $\frac{1}{2}$ Tw. (30%)
	1000 grms.

After printing the goods are steamed for 1 hour without pressure, washed and dried.

Wool Printing.
(Slubbing Printing.)



Brilliant Geranine B.



Sango Green



Chloramine Brown 4.



Geranine Yellow



Brilliant Congo



Fashion Azure



Geranine



Geranine



Orange



Geranine

Half Wool Printing.

(Wool and cotton).

The following Benzidine Dyestuffs are adapted for **printing half wool**:

Red Dyestuffs:

Benzo Purpurine 4 B
Brilliant Geranine B.

Orange Dyestuffs:

Congo Orange G.

Yellow Dyestuffs:

Chrysophenine.

Blue Dyestuffs:

Benzo Sky Blue.

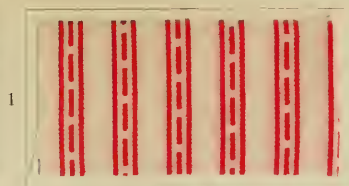
Brown Dyestuffs:

Toluylene Brown.

No. 1.		No. 2.	
Boil:		Boil:	
4 oz. or	20 grms. Brilliant Geranine B		The same as No. 1 but with
3 ³ / ₄ lbs. "	300 " British gum and	4 oz. or 20 grms.	Congo Orange G.
6 ¹ / ₂ pints "	600 " water, and then add		
4 oz. "	20 " borax		
	<u>1000 grms.</u>		

Steam for 1 hour without pressure, wash and dry.

Half Wool Printing.



2% Brilliant Geranine B.

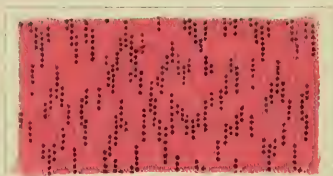
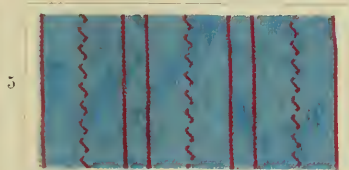
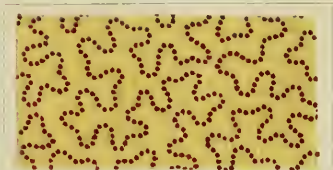


2% Congo Orange G.

Half Wool Dyeing.

(Discharge Printing).

Wool and mercerised Cotton.

Dyed with: 0.1% Congo Orange R;
Discharged with: 2% Rhoduline Violet.Dyed with: 0.15% Geranine G;
Discharged with:
1.5% New Methylene Blue 3 R.Dyed with: 0.1% Brilliant Benzo Blue
6 B and 0.03% Alkali Blue 6 B;
Discharged with: 4% Rhodamine 6 G.Dyed with: 0.1% Chrysophenine;
Discharged with: 3% Rhoduline Violet.Halfwool dyed with:
6% Direct Deep Black G,
1% Sulphon Cyanine G B extra,
1/2% Sniphan Blue Black;
Discharged with: 6% Rhodamine 6 G
and 0.8% Auramine II.Halfwool dyed with:
2% Benzo Chrome Brown B,
0.4% Benzochrome Brown G;
Discharged with:
1.5% Brilliant Green crystals and
1.5% Auramine G.

Half Wool Dyeing.

The **Benzidine Colours** are very suitable for the **dyeing of half wool**, and if discharge-able Benzidine Dyestuffs be used useful discharge effects can be obtained.

The affinity of the Benzidine dyestuffs to both fibres is indicated in a general way in the following tables, but it is to be noted that the temperature of the dye bath, volume of water etc. are important factors in dyeing.

1. The following colours dye **cotton and wool equally** (or almost equally) i. e. in similar shade and strength:

Benzo Purpurine 4 B, 10 B. Congo Red. Hessian Purple X. — Benzo Orange R. Congo Orange R. Orange T.A. Toluylene Orange G. — Thiazol Yellow. — Benzo Green G. — Benzo Azurine G, 3 G. Benzo Blue 2 B, 3 B, B X, R W. Benzo Cyanine B. Chicago Blue B. Diazo Blue Black. Diazo Black B, R. — Benzo Brown N B X. Benzo Chrome Brown B, G, R, 3 R. Benzo Dark Brown. Benzo Black Brown. Congo Corinth G. Direct Fast Brown B. Toluylene Brown R, M, B. — Direct Blue Black B, N. Direct Deep Black G, R. Pluto Black G.

2. The following colours dye the **wool darker**, but in the same or almost the same shade as the cotton:

Brilliant Geranine 3 B. Delta Purpurine 5 B. Geranine G. Hessian Purple B. Chrysamine G, R. Chrysophenine. — Benzo Dark Green. — Diazo Red Blue. Brilliant Benzo Blue 6 B. — Congo Rubine.

3. The following colours dye the **cotton darker** but in the same or almost the same shade as the wool:

Chloramine Orange. — Chloramine Yellow. Curcumine S. Direct Yellow R. Mikado Yellow. — Brilliant Azurine B. Benzo Chrome Black Blue B. Benzo Sky Blue. Chicago Blue R. — Diazo Black B 11 N.

4. The following colours dye the **cotton** and the **wool very different** shades:

Benzo Olive. — Benzo Black Blue G, R. — Benzo Brown N B R.

5. The following colours are adapted for shading the wool, as they dye well in a neutral bath:

Cochineal Scarlet P S. Croceine Scarlet 3 B. Brilliant Croceine 3 B. — Orange G T. — Indian Yellow G. — Acid Green 3 B. — New Victoria Blue B. Lazuline Blue R. Sulphon Cyanine. — Alkali Violet R. Acid Violet H W. — Sulphon Black. Sulphon Blue Black.

Half Wool Discharge Printing.

The Benzidine dyestuffs are of considerable importance for half wool dyeing.

No. 3.

Dyed with:

0.1 % **Congo Orange R**
20 % Glauber's salt.

Discharged with:

	4 oz. or	20 grms.	Rhoduline Violet
	14 oz. "	70 "	wheat starch
	$\frac{1}{4}$ gallon "	220 "	gum water 1:1
	$\frac{1}{4}$ gallon "	200 "	water
	2 $\frac{1}{2}$ pints "	250 "	acetic acid 9° Tw. (30%)
	$\frac{1}{8}$ pint "	100 "	acetate of tin 32° Tw.
	12 oz. "	60 "	tannic acid dissolved in
	2 $\frac{1}{2}$ noggs. "	60 "	acetic acid 9° Tw. (30%)
	4 oz. "	20 "	citric acid
	1000 grms.		

No. 4.

Dyed with:

0.15 % **Geranine G**
20 % Glauber's salt.

Discharged with:

	3 oz. or	15 grms.	New Methylene Blue 3 R
	14 oz. "	70 "	wheat starch
	$\frac{1}{4}$ gallon "	220 "	gum water 1:1
	2 $\frac{1}{8}$ pints "	255 "	water
	$\frac{1}{4}$ gallon "	200 "	acetic acid 9° Tw. (30%)
	$\frac{1}{8}$ pint "	100 "	acetate of tin 32° Tw.
	12 oz. "	60 "	tannic acid dissolved in
	2 $\frac{1}{2}$ noggs. "	60 "	acetic acid 9° Tw. (30%)
	4 oz. "	20 "	citric acid
	1000 grms.		

No. 5.

Dyed with:

0.1 % **Brilliant Benzo Blue 6 B**
0.03 % **Alkali Blue 6 B**
20 % Glauber's salt.

Discharged with:

	8 oz. or	40 grms.	Rhodamine 6 G
	14 oz. "	70 "	wheat starch
	$\frac{1}{4}$ gallon "	220 "	gum water 1:1
	2 $\frac{1}{2}$ pints "	250 "	water
	1 $\frac{1}{4}$ pints "	130 "	acetic acid 9° Tw. (30%)
	1 $\frac{1}{4}$ pints "	150 "	acetate of tin 32° Tw.
	12 oz. "	60 "	tannic acid dissolved in
	2 $\frac{1}{2}$ noggs. "	60 "	acetic acid 9° Tw. (30%)
	4 oz. "	20 "	citric acid
	1000 grms.		

No. 6.

Dyed with:

0.1 % **Chrysophenine**
30 % Glauber's salt.

Discharged with:

	6 oz. or	30 grms.	Rhoduline Violet
	14 oz. "	70 "	wheat starch
	$\frac{1}{4}$ gallon "	220 "	gum water 1:1
	1 pint "	100 "	water
	2 $\frac{1}{2}$ pints "	260 "	acetic acid 9° Tw. (30%)
	1 $\frac{1}{4}$ pints "	150 "	acetate of tin 32° Tw.
	15 oz. "	75 "	tannic acid dissolved in
	3 noggs. "	75 "	acetic acid 9° Tw. (30%)
	4 oz. "	20 "	citric acid
	1000 grms.		

No. 7.

Dyed with:

- 6% Direct Deep Black G
 1% Sulphon Cyanine G R extra
 1/2% Sulphon Blue Black
 20% Glauber's salt.

Boil for 1/2 hour, and let the goods run for another
 1/2 hour without steam.

Boil: Discharged with:

12 oz. or	60 grms.	Rhodamine 6 G
1 1/2 oz. "	8 "	Auramine II
14 oz. "	70 "	wheat starch
1/4 gallon "	22 "	acetic acid 9° Tw. (30%)
1 1/2 pint "	150 "	gum water 1:1
2 1/4 pints "	250 "	acetate of tin 32° Tw.
		and then add
1 1/4 lbs. "	100 "	tin crystals
{ 2 lbs. "	160 "	tannic acid dissolved in
{ 1 1/2 pints "	160 "	acetic acid 9° Tw. (30%)
4 oz. "	20 "	citric acid
	1000 grms.	

Steam for 1/2 hour without pressure.

No. 8.

Dyed with:

- 2% Benzo Chrome Brown B
 0.4% Benzo Chrome Brown G
 10% Glauber's salt crystals.

Enter at 125° Fahr. bring slowly to the boil, shut
 off steam and then run the goods for 1/2 1 hour
 longer.

Discharged with:

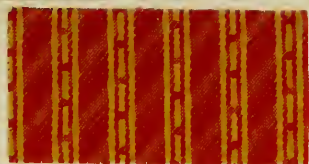
3 oz. or	15 grms.	Brilliant Green (crystals)
3 oz. "	15 "	Auramine G
14 oz. "	70 "	wheat starch
1/2 pint "	100 "	acetic acid 9° Tw. (30%)
1/8 pint "	90 "	water
1 3/4 pints "	190 "	gum water 1:1
2 1/4 pints "	250 "	acetate of tin 32° Tw.
1 1/4 lbs. "	100 "	tin crystals
1 1/4 pints "	150 "	solution of tannic acid 1:1
4 oz. "	20 "	citric acid
	1000 grms.	

After printing with discharges the pieces are steamed for 1/2-1 hour without pressure, according to the depth of the engraving and quantity of tin crystals used, and then run through a cold bath of tartar emetic, washed and dried.

Half Wool Dyeing.
(Discharge Printing).

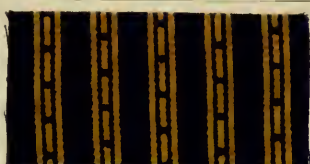
Table 29a.

9



Dyed with: 4% Benzo Purpurine 1B;
Discharged with: 4% Auramine G.

10



Dyed with: 4% Benzo Cyanine B;
Discharged with: 4% Auramine G.

11



Dyed with: 4% Chrysophenine and
1.5% Brilliant Green;
Discharged with: 1.5% Auramine G.

12



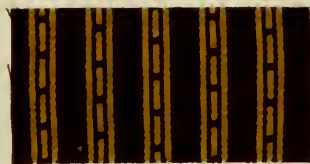
Dyed with: 4% Geranine G;
Discharged with: 1% Auramine G.

13



Dyed with: 1% Benzo Chrome Brown B;
Discharged with: 4% Auramine G.

14



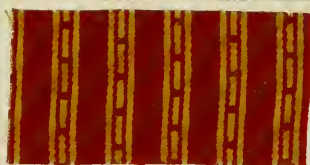
Dyed with: 4% Direct Fast Brown B;
Discharged with: 4% Auramine G.

15



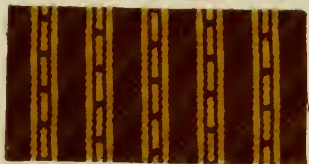
Dyed with: 4% Benzo Orange R;
Discharged with: 1.5% Brilliant Green
and 1.5% Auramine G.

16



Dyed with: 4% Benzo Purpurine 10B;
Discharged with: 1% Auramine G.

17



Dyed with: 4% Toluylene Brown M;
Discharged with: 4% Auramine G.

18



Dyed with: 4% Chicago Blue R;
Discharged with: 1% Auramine G.

No. 9.

Dyed with: 4% **Benzo Purpurine 4 B**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 11.

Dyed with: 4% **Chrysophenine**
 10% Glauber's salt.
 Discharged with: $\left\{ \begin{array}{l} 1.5\% \text{ Brilliant Green crystals} \\ 1.5\% \text{ Auramine G.} \end{array} \right.$

No. 13.

Dyed with: 4% **Benzo Chrome Brown R**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 15.

Dyed with: 4% **Benzo Orange R**
 10% Glauber's salt.
 Discharged with: $\left\{ \begin{array}{l} 1.5\% \text{ Brilliant Green crystals} \\ 1.5\% \text{ Auramine G.} \end{array} \right.$

No. 17.

Dyed with: 4% **Toluylene Brown M**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 10.

Dyed with: 4% **Benzo Cyanine B**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 12.

Dyed with: 4% **Geranine G**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 14.

Dyed with: 4% **Direct Fast Brown B**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 16.

Dyed with: 4% **Benzo Purpurine 10 B**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

No. 18.

Dyed with: 1% **Chicago Blue B**
 10% Glauber's salt.
 Discharged with: 4% **Auramine G**.

In dyeing raise temperature to boil in $\frac{1}{2}$ hour, boil for $\frac{3}{4}$ hour, run $\frac{1}{2}$ hour without steam, rinse and dry. Afterwards print with discharge colour, steam for $\frac{1}{4}$ hour without pressure, and finally pass through a cold tartar emetic bath, wash and dry.

Yellow Discharge.

8 oz. or	40 grms.	Auramine G
14 oz. "	70 "	wheat starch
1 pint "	100 "	acetic acid 9° Tw. (30%)
$\frac{3}{4}$ pint "	70 "	water
$\frac{1}{4}$ pint "	140 "	gum water 1:1
$\frac{2}{4}$ pints "	250 "	acetate of tin 32° Tw.
2 lbs. "	160 "	tin crystals
$\frac{1}{4}$ pints "	150 "	solution of tannic and acetic acid 1:1
4 oz. "	20 "	citric acid powder
	1000 grms.	

Green Discharge.

3 oz. or	15 grms.	Auramine G
3 oz. "	15 "	Brilliant Green crystals
14 oz. "	70 "	wheat starch
1 pint "	100 "	acetic acid 9° Tw. (30%)
$\frac{1}{4}$ pints "	120 "	water
$\frac{1}{4}$ pints "	140 "	gum water 1:1
$\frac{2}{4}$ pints "	250 "	acetate of tin 32° Tw.
$\frac{1}{2}$ lbs. "	120 "	tin crystals
$\frac{1}{4}$ pints "	150 "	solution of tannic and acetic acid 1:1
4 oz. "	20 "	citric acid powder
	1000 grms.	

Silk Printing.

The following Benzidine Dyestuffs can be printed on **silk goods**:

Red Dyestuffs:

Benzo Purpurine 1 B
 Brilliant Geranine B
 Delta Purpurine 5 B
 Rose Azurine B.

Orange Dyestuffs:

Benzo Orange R
 Chloramine Orange G
 Congo Orange G, R.

Yellow Dyestuffs:

Chloramine Yellow
 Chrysophenine.

Blue Dyestuffs:

Benzo Azurine G
 Benzo Sky Blue.

Violet Dyestuffs:

Heliotrope B B (red violet)

Brown Dyestuffs:

Congo Corinth G, B.

Grey Dyestuffs:

Benzo Fast Grey.

Table 30.

The Benzidine dyestuffs can also be used for direct printing on silk.

No. 1.

Printed with:

Boil:

4 oz. or	20 grms.	Heliotrope B B
3 ³ / ₄ lbs.	" 300 "	British gum
6 ¹ / ₂ pints	" 660 "	water, and then add
4 oz.	" 20 "	phosphate of soda
<hr/>		
1000 grms.		

No. 2.

Printed with:

Boil:

4 oz. or	20 grms.	Brilliant Geranine B
3 ³ / ₄ lbs.	" 300 "	British gum and
6 ¹ / ₂ pints	" 660 "	water, and then add
4 oz.	" 20 "	phosphate of soda
<hr/>		
1000 grms.		

Steam for 1 hour without pressure, wash and dry.

Silk Discharge Printing.

Dyed on silk the following Benzidine dyestuffs can be discharged with zinc powder:

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B
Brilliant Geranine B
Geranine G
Rose Azurine G.

Orange Dyestuffs:

Benzo Orange R
Congo Orange G, R.

Yellow Dyestuffs:

Chrysamine G
Chrysophenine.

Green Dyestuffs:

Benzo Olive (yellow).

Blue Dyestuffs:

Benzo Blue 2 B, B X
Benzo Chrome Black Blue B
Benzo Cyanine B, R
Benzo Cyanine 3 B
Benzo Indigo Blue
Brilliant Azurine 5 G
Brilliant Benzo Blue 6 B
Brilliant Sulphon Azurine R
Diazo Blue (5-Naphtol)
Sulphon Azurine D (yellow).

Violet Dyestuffs:

Azo Violet
Heliotrope B B.

Brown Dyestuffs:

Congo Corinth B, G.

Grey Dyestuffs:

Benzo Grey S extra (yellow).

Black Dyestuffs:

Benzo Black S extra (yellow)
Diazo Blue Black B (yellowish)
Diazo Brilliant Black B (5-Naphtol)
Diazo Brilliant Black R (5-Naphtol)
Diazo Black R (5-Naphtol)
Direct Blue Black B (yellowish)

Table 30

No. 3.

Dyed with:

3% **Brilliant Benzo Blue 6 B**
(boiled off liquor and acetic acid).

Discharged with:

zinc powder and bisulphite of soda as given
on page 42.

Steam for $\frac{1}{2}$ hour without pressure, give a
slight sour, wash and dry.

No. 4.

Dyed with:

5% **Congo Corinth G**
(boiled off liquor and acetic acid).

Discharged with:

Dissolve:

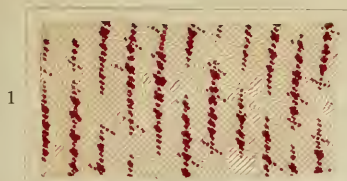
3 oz. or	6 grms.	Methylene Blue B B	in
2 $\frac{1}{2}$ pints	" 94	"	water and
6 $\frac{1}{2}$ pints	" 300	"	gum water 1:1; and
			when cold add
10 lbs.	" 320	"	zinc powder; then add
			slowly
5 $\frac{1}{4}$ pints	" 280	"	bisulphite of soda 66%
	1000 grms.		[Tw.

After printing steam for $\frac{1}{4}$ hour without
pressure, wash and dry.

Silk Printing.

Table 30.

(Direct Printing).



1

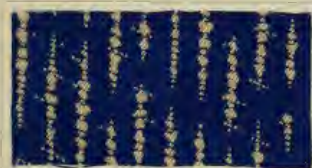
Printed with: 2% Heliotrope E B.



2

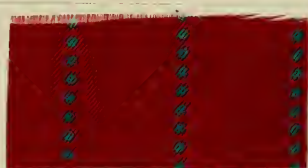
Printed with: 2% Brilliant Geranine E.

(Discharge Printing).



3

Dyed with: Brilliant Benzo Blue 6 B;
Discharged with: zinc powder.



4

Dyed with: 5% Congo Corinth G;
Discharged with: 0.6% Methylene
Blue B B and zinc powder.

(Yarn Printing).



5

Printed with: 2% Benzo Orange R.



6

Printed with: 2% Brilliant Benzo Blue 6 B.

(Yarn Discharge Printing).



7

Dyed with: 4% Geranine G; Discharged
with: 3% Fast Acid Violet 10 B.



8

Dyed with: 1% Benzo Purpurine 1 B;
Discharged with: zinc powder.

Half Silk Printing.

(Direct Printing).



9

Printed with: 6% Benzo Orange R.



10

Printed with: 6% Benzo Purpurine 1 B.

The following dyestuffs are **not destroyed by zinc powder**, and are therefore adapted for **colour discharging** Benzidine dyestuffs dyed on silk:

Red Dyestuffs:

Rhoduline Red B, G
Saffranine F F extra.

Yellow Dyestuffs:

Quinoline Yellow.

Blue Dyestuffs:

Induline B, 6 B
Methylene Blue B B.

Violet Dyestuffs:

Rhoduline Violet.

Silk Yarn Printing.

The following Benzidine Colours are adapted for **printing silk yarn** :

Red Dyestuffs:

Brilliant Geranine B.

Orange Dyestuffs:

Benzo Orange R.

Blue Dyestuffs:

Benzo Sky Blue
Brilliant Benzo Blue 6B.

Brown or Bordeaux Dyestuffs:

Congo Corinth G.

Table 30.

No. 5.	No. 6.																																																																
Orange.	Blue.																																																																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">4 oz. or</td> <td style="width: 15%;">20 grms.</td> <td style="width: 15%;">Benzo Orange R</td> <td style="width: 55%;"></td> </tr> <tr> <td></td> <td></td> <td>dissolved in</td> <td></td> </tr> <tr> <td>3¹/₂ pints</td> <td>" 360 "</td> <td>water, and thickened</td> <td></td> </tr> <tr> <td></td> <td></td> <td>with</td> <td></td> </tr> <tr> <td>6 pints</td> <td>" 600 "</td> <td>mucilage of traga-</td> <td></td> </tr> <tr> <td></td> <td></td> <td>cant 65:1000</td> <td></td> </tr> <tr> <td>4 oz.</td> <td>" 20 "</td> <td>phosphate of soda</td> <td></td> </tr> <tr> <td></td> <td style="border-top: 1px solid black;">1000 grms.</td> <td></td> <td></td> </tr> </table>	4 oz. or	20 grms.	Benzo Orange R				dissolved in		3 ¹ / ₂ pints	" 360 "	water, and thickened				with		6 pints	" 600 "	mucilage of traga-				cant 65:1000		4 oz.	" 20 "	phosphate of soda			1000 grms.			<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">4 oz. or</td> <td style="width: 15%;">20 grms.</td> <td style="width: 15%;">Brilliant Benzo Blue</td> <td style="width: 55%;"></td> </tr> <tr> <td></td> <td></td> <td>6 B dissolved in</td> <td></td> </tr> <tr> <td>3¹/₂ pints</td> <td>" 360 "</td> <td>water, and thickened</td> <td></td> </tr> <tr> <td></td> <td></td> <td>with</td> <td></td> </tr> <tr> <td>6 pints</td> <td>" 600 "</td> <td>mucilage of traga-</td> <td></td> </tr> <tr> <td></td> <td></td> <td>cant 65:1000</td> <td></td> </tr> <tr> <td>4 oz.</td> <td>" 20 "</td> <td>phosphate of soda</td> <td></td> </tr> <tr> <td></td> <td style="border-top: 1px solid black;">1000 grms.</td> <td></td> <td></td> </tr> </table>	4 oz. or	20 grms.	Brilliant Benzo Blue				6 B dissolved in		3 ¹ / ₂ pints	" 360 "	water, and thickened				with		6 pints	" 600 "	mucilage of traga-				cant 65:1000		4 oz.	" 20 "	phosphate of soda			1000 grms.		
4 oz. or	20 grms.	Benzo Orange R																																																															
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		cant 65:1000																																																															
4 oz.	" 20 "	phosphate of soda																																																															
	1000 grms.																																																																

Steam for 1 hour without pressure, wash and dry.

Discharge Printing on Silk Yarn.

Those Benzidine Dyestuffs which can be discharged with zinc powder (or tin crystals) after having been dyed on silk yarn, are the same as those given on page 96 for dyeing silk stuffs.

No. 7.

Dyed with:

4% **Geranine G.**

Discharged with:

Blue Discharge.

Boil.

6 oz. or	30 grms.	Fast Acid Violet 10 B
1½ pints	" 168 "	water
4½ pints	" 450 "	gum water 1:1
10 oz.	" 48 "	wheat starch
5 oz.	" 24 "	dextrine and
1 pint	" 100 "	water, and then add
1 pint	" 120 "	acetate of tin 32° Tw.
12 oz.	" 60 "	tin crystals

1000 grms.

Steam for ¼ hour without pressure, wash and dry.

No. 8.

Dyed with:

4% **Benzo Purpurine 1 B.**

Discharged with:

Zinc powder as same page 42.

The following **undischARGEABLE** dyestuffs are adapted for **colour discharges with tin** on silk yarn dyed with dischargeable Benzidine colours:

Red Dyestuffs:

Saffranine FF extra.

Yellow Dyestuffs:

Auramine II
Quinoline Yellow.

Green Dyestuffs:

Brilliant Green crystals
Fast Green bluish
Fast Green extra bluish
Fast Light Green
Acid Green G G, B B N, 3 B.

Blue Dyestuffs:

Fast Acid Blue B
Fast Acid Violet 10 B.

Violet Dyestuffs:

Methyl Violets
Acid Violets.

The following Benzidine Dyestuffs dyed on silk are fast to milling:

Red Dyestuffs:

Diazo Bordeaux (Developer A)
Rose Azurine G, B.
Yellow PR (Developer A)

Orange Dyestuffs:

Chloramine Orange G
Yellow PR (Developer F)

Yellow Dyestuffs:

Chloramine Yellow
Direct Yellow R.

Blue Dyestuffs:

Brilliant Azurine 5G
Brilliant Sulphon Azurine R
Diazurine B (Developer A)
Diazo Blue (Developer A)
Diazo Red Blue 3R (Developer A)
Sulphon Azurine D.

Violet Dyestuffs:

Heliotrope.

Brown Dyestuffs:

Chloramine Brown G.
Diazo Brilliant Black R, B (Developed with
soda)
Diazo Brown G, V (Developer A)
Diazo Brown R extra (Developed with soda)
Diazo Brown R extra (Developer H)
Diazo Brown R extra (chromed and coppered).

Black Dyestuffs:

Benzo Fast Black (Developer A)
Diazo Brilliant Black R, B (Developer B)
Diazo Blue Black (Developer A)
Diazo Black R, G, H, B (Developer A)

The following Benzidine Dyestuffs dyed on silk are fast to alkali (ammonia):

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B, 6 B, 10 B
Brilliant Congo R
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Delta Purpurine 5 B
Diazo Bordeaux (Developer A)
Geranine BB
Hessian Purple N
Rose Azurine G, B
Yellow PR (Developer A).

Orange Dyestuffs:

Chloramine Orange G
Mikado Orange R
Tolylene Orange R.

Yellow Dyestuffs:

Chloramine Yellow
Chrysophenine
Direct Yellow R.

Blue Dyestuffs:

Benzo Black Blue G, R
Brilliant Sulphon Azurine R
Diazo Blue (Developer A)
Diazo Blue Black (undiazotised)
Diazo Red Blue 3R (Developer A)
Sulphon Azurine D.

Violet Dyestuffs:

Benzo Violet R
Heliotrope
Heliotrope BB.

Brown Dyestuffs:

Benzo Brown G, GG, B, BX, R extra
Benzo Chrome Brown B, G, R
Chloramine Brown G
Congo Corinth G, B
Diazo Brown G, V (Developer A)
Diazo Brown R extra (developed with soda)
Diazo Brown R extra (Developer H)
Diazo Brown R extra (chromed and coppered).
Tolylene Brown B, R

Black Dyestuffs:

Benzo Fast Black
Benzo Fast Black (Developer A)
Diazo Brilliant Black R, B (Developer B)
Diazo Blue Black (Developer A)
Diazo Black R, G, II, B (Developer A).

The following Benzidine Dyestuffs dyed on silk are fairly fast to water:

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B
Brilliant Congo R
Diazo Bordeaux (Developer A)
Yellow PR (Developer A).

Orange Dyestuffs:

Benzo Orange R
Chloramine Orange G
Congo Orange
Mikado Orange R
Mikado Orange G
Yellow PR (Developer F).

Yellow Dyestuffs:

Chloramine Yellow
Chrysamine G
Chrysamine R
Chrysophenine.

Blue Dyestuffs:

Benzo Azurine G
Benzo Black Blue R, G
Diazo Blue (Developer A)
Diazo Red Blue 3R (Developer A)
Diazurine B (Developer A)
Sulphon Azurine D.

Brown Dyestuffs:

Chloramine Brown G
Diazo Brown R extra (Developed with soda)
Diazo Brown R extra (Developer H)
Diazo Brown R extra (chromed and coppered)
Diazo Brown G, V (Developer A)
Diazo Brown V
Diazo Brilliant Black R, B (Developed with
soda)

Black Dyestuffs:

Benzo Fast Black (Developer A)
Diazo Blue Black (Developer A)
Diazo Black R, G, H, B (Developer A)
Diazo Brilliant Black R, B (Developer B).

The following Benzidine Dyestuffs dyed on silk are fast to acid (acetic acid):

Red Dyestuffs:

Benzo Purpurine 1 B, 4 B
Brilliant Congo R
Brilliant Geranine B, 3 B
Brilliant Purpurine R
Delta Purpurine 5 B
Diazo Bordeaux (Developer A)
Geranine BB
Hessian Purple N
Rose Azurine G, B
Yellow PR (Developer A).

Orange Dyestuffs:

Congo Orange
Chloramine Orange G
Mikado Orange R, G
Toluylene Orange G
Yellow PR (Developer F).

Yellow Dyestuffs:

Chloramine Yellow
Chrysamine G, R
Chrysophenine.

Blue Dyestuffs:

Benzo Azurine G
Benzo Black Blue G, R
Brilliant Azurine 5 G
Brilliant Sulphon Azurine R
Diazo Blue (Developer A)
Diazo Blue Black (undiazotised)
Diazo Red Blue 3 R (Developer A)
Diazurine B (Developer A)
Sulphon Azurine D.

Violet Dyestuffs:

Benzo Violet R
Heliotrope
Heliotrope BB

Brown Dyestuffs:

Benzo Brown G, G G, B, B X, R extra
Benzo Chrome Brown G, R
Chloramine Brown G
Diazo Brown G, V
Diazo Brown G, V (Developer A)
Diazo Brown R extra (Developer H)
Diazo Brown R extra (Developed with soda)
Diazo Brilliant Black R, B (Developed with
Toluylene Brown R, B. [soda])

Black Dyestuffs:

Benzo Fast Black
Benzo Fast Black (Developer A)
Diazo Black R, G, H, B (Developer A)
Diazo Blue Black (Developer A).
Diazo Brilliant Black R, B (Developer A)

Half Silk Printing.

The Benzidine Colours are also employed in **half silk printing**. The following were printed with:

Boil: No. 9.
 12 oz. or 60 grms. **Benzo Orange R**
 3 lbs. 2 oz. " 250 " British gum and
 6³/₄ pints " 670 " water, and then add
 4 oz. " 20 " phosphate of soda
 1000 grms.

 No. 10.
 The same as No. 9 but with
 12 oz. or 60 grms. **Benzo Purpurine 1 B**.

Table 31.

 No. 11.
 The same as No. 9 but with
 12 oz. or 60 grms. **Benzo Chrome Brown B**.

 No. 12.
 The same as No. 9 but with
 12 oz. or 60 grms. **Delta Purpurine 5 B**.

Boil: No. 13.
 4 oz. or 20 grms. **Geranine G**
 3³/₄ lbs. " 300 " British gum and
 6¹/₂ pints " 660 " water, and then add
 4 oz. " 20 " phosphate of soda
 1000 grms.

Boil: No. 14.
 2 oz. or 10 grms. **Brilliant Benzo**
 Blue 6 B
 3³/₄ lbs. " 300 " British gum and
 6³/₄ pints " 670 " water, and then add
 4 oz. " 20 " phosphate of soda
 1000 grms.

Steam for 1 hour without pressure, wash and dry.

Half Silk Dyeing.

The Benzidine dyestuffs are very suitable for **half silk dyeing**. In their behaviour to silk and cotton they vary considerably. Many of them dye the cotton and leave the silk undyed, whilst others dye both silk and cotton the same or different shades. Colours of the latter class dye the silk more than the cotton. They are dyed with the addition to the bath of Glauber's salt and soap.

1. The following colours dye **silk and cotton equally**:

Benzo Purpurine 4 B, Brilliant Congo R, Brilliant Geranine 3 B, Delta Purpurine 5 B, Geranine G, Rose Azurine B, G. = Chrysamine G, R, Chrysophenine. = Benzo Dark Green. Congo Corinth, Toluylene Brown B B O.

2. The following colours leave the **silk white or almost white** and dye the **cotton** only:

Chloramine Orange G. = Direct Yellow R. — Benzo Sky Blue (soap), Benzo Black Blue G (soap), Benzo Blue 2 B, 3 B, Brilliant Benzo Blue 6 B, Benzo Chrome Black Blue B (almost white). = Diamine Black R O.

3. The following colours dye the **silk less than the cotton** (or the cotton more than the silk):

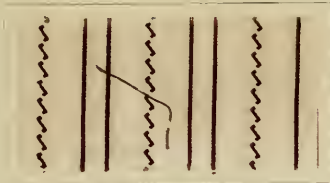
Chloramine Yellow (slightly), Thiazole Yellow (almost the same). — Benzo Green G. — Benzo Blue RW (slightly), Benzo Indigo Blue (slightly). — Toluylene Brown R.

4. The following colours dye the **silk a different colour to the cotton**:

Azo Blue (silk redder), Benzo Azurine G (silk reddish, cotton a deeper blue). = Azo Violet (silk redder, cotton darker). = Benzo Brown B (silk redder), Benzo Chrome Brown B, G, R and 3 R (silk lighter shade, somewhat yellower than the cotton). = Diamine Black B O (silk redder).

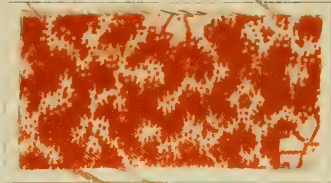
Half Silk Printing.

11



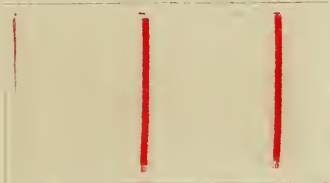
Half Silk printed with:
6% Benzo Chrome Brown B.

12



Half Silk printed with:
6% Delta Purpurine 5 B.

13



Half Silk printed with:
2% Geranine G.

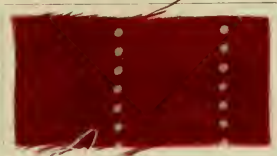
14



Half Silk printed with:
1% Brilliant Benzo Blue 6 B.

(Discharge Printing with zinc.)

1



Congo Cerinth G.

2



Toluylene Brown B B O.

3



Chrysophenine.

4



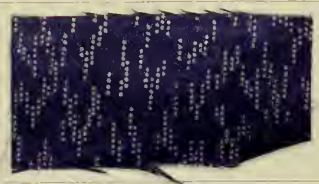
Delta Purpurine 5 B.

5



Brilliant Geranine 3 B.

6



Benzo Blue 2 B.

Half Silk Discharge Printing.

The following Benzidine dyestuffs dyed on half silk can be discharged with zinc powder:

Red Dyestuffs:

Benzo Purpurine 4 B
Brilliant Congo G and R
Brilliant Geranine B, 3 B
Geranine G
Rose Azurine G, B.

Orange Dyestuffs:

Benzo Orange R
Congo Orange R.

Yellow Dyestuffs:

Chrysamine G, R
Chrysophenine.

Green Dyestuffs:

Benzo Dark Green
Benzo Green G
Benzo Olive.

Blue Dyestuffs:

Azo Blue
Benzo Blue 2 B, 3 B, B X, R W
Benzo Azurine G
Benzo Cyanine 3 B
Benzo Indigo Blue
Benzo Sky Blue
Benzo Black Blue G
Brilliant Azurine 5 G
Brilliant Sulphon Azurine R
Brilliant Benzo Blue 6 B
Sulphon Azurine D.

Violet Dyestuffs:

Azo Violet
Heliotrope B B.

Brown Dyestuffs:

Benzo Brown B R, G G, B
Benzo Chrome Brown B, G, R, 3 R
Congo Corinth G
Heliotrope
Toluyene Brown B B O, R.

Black Dyestuffs:

Diamine Black R O, B O.

Discharge Printing With Zinc Powder.

Colours dyed with dischargeable Benzidine dyestuffs can be easily discharged with zinc powder and bisulphite.

White Discharge.

Mix:

12 lbs. or 333 grms.	zinc powder, finely sifted
1 gallon "	333 " gum water 1:1, cool down with ice, and add gradually
7 $\frac{1}{4}$ pints "	334 " bisulphite of soda 66° Tw.
1000 grms.	

Print on with a brush furnisher, steam for $\frac{1}{2}$ —1 hour without pressure, give a weak sour, wash and dry.

No. 1.

4 % Congo Corinth G
10 % Glauber's salt
2 % soap.

Dye for 1 hour at 195° Faht.

No. 3.

2 % Chrysofenine
10 % Glauber's salt
2 % soap.

No. 5.

2 % Brilliant Geranine 3 B
10 % Glauber's salt
4 % soap.

No. 2.

4 % Toluylene Brown B B O
10 % Glauber's salt
2 % soap.

No. 4.

4 % Delta Purpurine
10 % Glauber's salt
2 % soap.

No. 6.

3 % Benzo Blue 2 B
10 % Glauber's salt, and later add
1 % acetic acid.

No. 7.

2% Geranine G

10% Glauber's salt

4% soap.

No. 8.

4% Benzo Blue RW

10% Glauber's salt

3% soap.

No. 10.

4% Benzo Green G

10% Glauber's salt.

4% soap.

No. 12.

3% Benzo Sky Blue

10% Glauber's salt.

No. 14.

4% Congo Orange R

10% Glauber's salt

2% soap.

No. 9.

4% Benzo Brown B

10% Glauber's salt

3% soap.

No. 11.

4% Rose Azurine B

10% Glauber's salt

3% soap.

No. 13.

2% New Toluylene Brown M

10% Glauber's salt

2% soap.

No. 15.

2% Chrysanine G

10% Glauber's salt

3% soap.

Half Silk Printing.
(Discharge Printing with zinc).



Geranine G.



Benzo Blue R W.



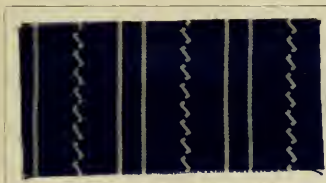
Benzo Brown B.



Benzo Green G.



Rose Azurine B.



Benzo Sky Blue.



New Toluylene Brown M.



Congo Orange R.



Chrysamine G.

Xyloline Printing.

The Benzidine dyestuffs can also be used for padding or printing Xyloline (cotton and paper).

Padding.

No. 1.

1 oz. or 50 grms. **Chloramine Yellow**
 12½ galls. " 100 litres water
 2 oz. " 100 grms. phosphate of soda.

No. 3.

1 oz. or 50 grms. **Heliotrope BB**
 12½ galls. " 100 litres water
 2 oz. " 100 grms. phosphate of soda.

No. 2.

1 oz. or 50 grms. **Geranine G**
 12½ galls. " 100 litres water
 2 oz. " 100 grms. phosphate of soda.

No. 4.

1 oz. or 50 grms. **Brilliant Benzo Blue 6 B**
 12½ galls. " 100 litres water
 2 oz. " 100 grms. phosphate of soda.

Pad on the slop padding machine.

Printing.

No. 5

Orange.

1½ pints or 150 grms. Print colour X
 8½ pints " 850 " mucilage of tragacanth 65:1000
 1000 grms.

Print Colour X.

Boil: 8 oz. or 40 grms. **Congo Orange G**
 1 lb. " 80 " wheat starch and
 8½ pints " 850 " water, and then add
 4 oz. " 20 " phosphate of soda
 1000 grms.

No. 6.

Blue.

The same as No. 5 but with
 8 oz. or 40 grms. **Brilliant Benzo Blue 6 B**.

No. 8.

Brown.

The same as No. 5 but with
 8 oz. or 40 grms. **Benzo Chrome Brown B**

No. 7.

Violet.

The same as No. 5 but with
 8 oz. or 40 grms. **Benzo Violet R**.

No. 9.

Pink.

The same as No. 5 but with
 8 oz. or 40 grms. **Geranine G**.

Steam for ½ hour without pressure.

Xyloline Printing.
(Padded).



1

Chloramine Yellow.



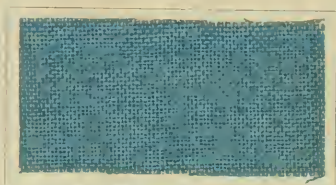
2

Geranine G.



3

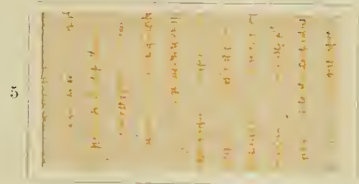
Hellotrope BB.



4

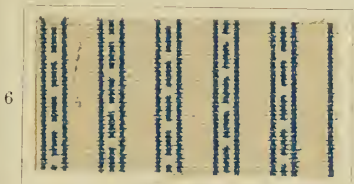
Brilliant Benzo Blue 6 B.

(Printed).



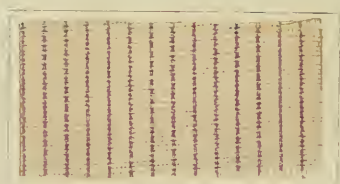
5

Congo Orange G.



6

Brilliant Benzo Blue 6 B.



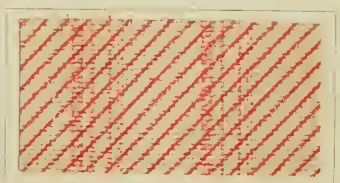
7

Benzo Violet R.



8

Benzo Chrome Brown B.



9

Geranine G.

Wool Silk Printing.

Many Benzidine Dyestuffs are further well adapted for dyeing mixed goods of wool and silk for discharge purposes.

No. 1.

Dye with: 2% **Chrysophenine**
20% Glauber's salt
and boil for 1 hour.

Steam for ½ hour without pressure, wash and dry.

Discharge with:
6 oz. or 30 grms. **Acid Violet 6 B** dissolved in
1½ pints " 170 " water, thickened with
5 pints " 600 " gum water 1:1, and then add
2½ lbs. " 200 " tin crystals
1000 grms.

The following dyestuffs are suitable for colour discharging with tin crystals:
Eosine S extra (yellowish), Quinoline Yellow, Acid Green G G, Fast Acid Blue B etc.

No. 2.

Dye with: 2% **Benzo Chrome Brown R**
20% Glauber's salt.
and boil for 1 hour.

Discharge with:

{	7½ oz. or 15 grms.	Methylene Blue B B
	1¼ gallon " 85 "	water, thickened with
	6½ pints " 300 "	gum water 1:1, warm
	10 lbs. " 320 "	and then add
	5 pints " 280 "	zinc powder, and add
	gradually, cooling down	
	with ice,	
	bisulphite of soda 72° Tw.	
	<u>1000 grms.</u>	

Steam for 1 hour without pressure, wash and dry.

No. 3.

Dye with: 2% **Congo Orange R**
20% Glauber's salt.
Boil for 1 hour.

Discharge with:

{	15 oz. or 30 grms.	Rhoduline Violet stirred
		up with
	1½ pints " 75 "	water, thickened with
	6½ pints " 300 "	gum water 1:1, warm,
		and then add
	10 lbs. " 320 "	zinc powder; finally add
		gradually after cooling
		with ice
	5 pints " 280 "	bisulphite of soda 72° Tw.

Treatment same as in No. 2.

The following colours can also be similarly employed for dyeing and discharging white: Benzo Chrome Brown G, B, Direct Fast Brown B, Toluylene Brown B, Direct Blue Black N, Diazo Blue Black, Brilliant Geranine B, Geranine G, Delta Purpurine 5 B, Benzo Olive, Benzo Sky Blue, Benzo Violet R etc.

Linon Printing.

The Benzidine Dyestuffs are also sometimes used for printing linen.

No. 4.

Boil: 6 oz. or 30 grms. **Chrysophenine**
3½ lbs. " 300 " British gum and
6½ pints " 670 " water
1000 grms.

Print the linen and then steam for 1 hour without pressure.

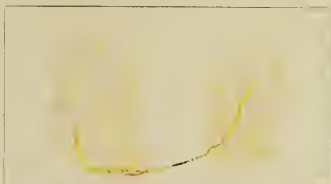
No. 5.

Boil: 8 oz. or 40 grms. **Brilliant Congo R**
3½ lbs. " 300 " British gum and
6½ pints " 660 " water
1000 grms.

Wool Silk Printing.
(Discharge Printing).

Table 34.

1



Dyed with: 2% Chrysophenine;
discharged with: 3% Acid Violet 6 B.

2



Dyed with: 2% Benzo Chrome Brown R;
discharged with: 1½% Methylene Blue BB.

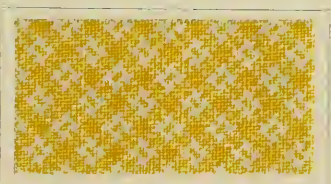
3



Dyed with: 2% Benzo Orange R;
discharged with: 3% Rhoduline Violet.

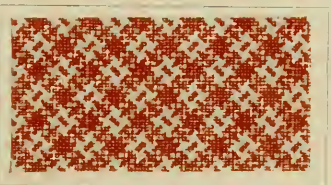
Linen Printing.

4



Chrysophenine.

5



Brilliant Congo R.

← Without Guarantee. →

Contents.

	Page
Preface	3
Cotton Printing	5
Slop Padding	5-11
Direct Printing	12-15
Machine Padding	16-17
Dyeing after Printing	18-19
Dyeing before Printing	20
Printing basic dyestuffs without tannic acid	20
Bronze Printing	22-23
Discharge Printing with tin crystals	24-29
Colour Discharge Printing with tin crystals	30-39
Dyestuffs not dischargeable by tin	40
Discharge Printing with zinc powder	41-43
Dyestuffs not dischargeable by zinc powder	44
Colour Discharging with zinc powder	45
Colour Discharge Printing with oxidising agents	46
Discharge Printing on Aniline Black	50-53
Discharge Printing on basic colours	52
Jantsch's process	55
Pluszanski's process	56-57
Discharging with oxidising agents	57-59
Mercerising	60-65
Zinc white Printing	66-67
Linings slop-padded	68-69
Finishing patterns	71-73
Tables of the Benzidine Dyestuffs fast to acid	70
Tables of the Benzidine Dyestuffs fast to alkali	72
Tables of the Benzidine Dyestuffs fast to ironing	74
Tables of the Benzidine Dyestuffs fast to chlorine	75
Tables of the Benzidine Dyestuffs fastest to light	76
Cotton Yarn Printing	77-79
Cotton Yarn Discharge Printing	78-81
Cotton Yarn mercerised	81-82

	Page
Wool Printing	83
Wool Stuff Printing	84-85
Wool Yarn Printing	85-86
Slubbing Printing	85-89
Half Wool Printing	90
Half Wool Stuff Printing	90-91
Half Wool Dyeing	92
Half Wool Discharge Printing	93-94 b
Silk Printing	95
Silk Stuff Printing	95-97
Silk Discharge Printing	96-97
Colour Discharges with zinc powder	98
Silk Yarn Printing	99
Silk Yarn Discharge Printing	100
Tables of the Benzidine Dyestuffs fast to milling	101
Tables of the Benzidine Dyestuffs fast to alkalies	102
Tables of the Benzidine Dyestuffs fast to water	103
Tables of the Benzidine Dyestuffs fast to acid	104
Half Silk Printing	105
Half Silk Stuff Printing	97, 105, 107
Half Silk Dyeing	106
Half Silk Discharge Printing	108
Discharge Printing with zinc	109-111
Wool and Silk	114-115
Linon Printing	114-115
Xyloline Printing	112-113

Contents	117-118
Index	119-121
Dyestuffs for Cotton Printing	122
Dyestuffs for Wool and Half Wool Printing	123
Dyestuffs for Silk and Half Silk Printing	124

Index.

	Page
Acetine Blue	52, 53
Acid Green B B N	100
Acid Green G G	100, 114
Acid Green 3 B	92, 100
Acid Violet H W	92
Acid Violets	100
Acid Violet 6 B	114, 115
Alizarine Red	80
Alizarine Red S X extra	7
Alizarine Red S X X	71
Alizarine Bordeaux	47, 49
Alizarine Cyanine Black G	48, 49
Alizarine Viridine	47, 49
Alkali Blue 6 B	92
Alkali Violet R	92
Alpha Naphtylamine	10, 55, 57
Aluminium	22, 23
Aniline Black	7, 9, 15, 18, 19, 20, 21, 28, 49, 52, 53, 56, 57, 61
Auramine G	31, 33, 35, 36, 63, 65, 80, 81, 91, 94
Auramine II	30, 34, 35, 36, 53, 60, 81, 91, 94, 100
Azo Blue	12, 24, 41, 106, 108
Azo Violet	12, 20, 21, 21, 35, 83, 41, 42, 43, 58, 60, 61, 62, 70, 96, 106, 108
Benzidine	10
Benzo Azurine G	12, 20, 21, 24, 41, 58, 70, 76, 83, 92, 95, 102, 104, 106, 108
Benzo Azurine R	12, 24, 41, 76
Benzo Azurine 3 G	21, 35, 36, 41, 58, 70, 76, 92
Benzo Blue B X	22, 23, 24, 41, 57, 58, 59, 70, 72, 80, 81, 92, 96, 103
Benzo Blue 2 B	5, 24, 35, 36, 41, 58, 70, 72, 77, 83, 92, 96, 106, 107, 108, 109
Benzo Blue 3 B	5, 14, 15, 24, 41, 58, 70, 72, 83, 92, 106, 108
Benzo Blue R W	12, 18, 19, 24, 31, 33, 41, 58, 70, 72, 76, 92, 106, 108, 110, 111
Benzo Blue 2 R	24, 41
Benzo Blue 4 R	24, 41
Benzo Brown B	12, 24, 41, 46, 58, 60, 70, 72, 102, 104, 106, 108, 110, 111
Benzo Brown B X	5, 6, 7, 24, 41, 42, 43, 46, 58, 70, 102, 104
Benzo Brown B R	5, 24, 46, 58, 70, 108
Benzo Brown G	5, 24, 46, 58, 72, 102, 104
Benzo Brown G G	12, 24, 34, 35, 46, 58, 102, 104, 108
Benzo Brown N B	12, 14, 15, 24, 37, 41, 46, 58, 63, 65
Benzo Brown R extra	5, 24, 41, 46, 58, 102, 104
Benzo Brown N B X	5, 24, 41, 46, 58, 92
Benzo Brown N B R	24, 41, 46, 92
Benzo Brown 5 R	5, 40, 46, 58, 72
Benzo Chrome Brown B	5, 12, 22, 23, 21, 28, 29, 32, 33, 41, 58, 60, 68, 69, 72, 76, 80, 81, 91, 92, 94, 102, 105, 106, 107, 108, 112, 113, 114
Benzo Chrome Brown G	5, 6, 7, 12, 14, 15, 24, 26, 27, 41, 58, 60, 63, 65, 68, 69, 76, 80, 81, 91, 92, 94, 102, 104, 106, 108, 114

	Page
Benzo Chrome Brown R	5, 12, 16, 17, 22, 23, 23, 29, 41, 58, 60, 76, 92, 102, 104, 106, 108, 114, 115
Benzo Chrome Brown 3 R	24, 41, 92, 106, 108
Benzo Chrome Brown 5 G	24, 41
Benzo Chrome Black N	24, 40, 41, 41, 41, 70
Benzo Chrome Black Blue B	5, 16, 17, 18, 19, 22, 23, 24, 34, 35, 41, 42, 43, 58, 60, 66, 67, 70, 72, 76, 80, 81, 92, 96, 106
Benzo Cyanine B	5, 8, 9, 24, 41, 42, 43, 58, 60, 70, 72, 92, 96
Benzo Cyanine 2 B	72, 96
Benzo Cyanine 3 B	5, 12, 24, 38, 39, 41, 58, 60, 70, 72, 96, 108
Benzo Cyanine R	5, 21, 41, 58, 60, 70, 72
Benzo Dark Brown	5, 24, 41, 58, 92
Benzo Dark Green	92, 106, 108
Benzo Fast Grey	24, 41, 58, 70, 74, 95
Benzo Fast Red	46
Benzo Fast Black	5, 8, 9, 12, 16, 17, 22, 23, 28, 29, 35, 36, 41, 58, 64, 65, 70, 72, 74, 76, 79, 101, 102, 103, 101
Benzo Grey	24, 41, 42, 43, 95
Benzo Grey S extra	24, 32, 33, 41, 58, 60, 95, 96
Benzo Green B B	5, 24, 41, 58, 70, 72
Benzo Green G	5, 8, 9, 10, 11, 14, 15, 16, 17, 22, 23, 24, 23, 29, 32, 33, 41, 58, 70, 72, 81, 82, 87, 88, 89, 92, 106, 108, 110, 111
Benzo Indigo Blue	24, 41, 58, 70, 72, 76, 96, 106, 108
Benzo Navy Blue B	24, 41, 58, 70, 72, 76
Benzo Nitrol Brown G	10, 18, 19, 64, 65, 70, 72
Benzo Nitrol Brown 2 R	70
Benzo Nitrol Dark Brown N	10
Benzo Olive	5, 12, 24, 37, 41, 42, 43, 58, 70, 74, 76, 92, 96, 108, 114
Benzo Orange R	5, 12, 21, 41, 58, 60, 77, 83, 84, 85, 92, 95, 97, 99, 103, 105, 108
Benzo Purpurine 1 B	5, 12, 24, 37, 41, 70, 72, 83, 95, 96, 97, 100, 102, 103, 104, 105
Benzo Purpurine 4 B	5, 12, 20, 21, 24, 23, 24, 28, 29, 31, 33, 37, 38, 39, 41, 51, 52, 53, 58, 60, 64, 63, 67, 72, 71, 77, 79, 81, 82, 84, 85, 86, 87, 90, 92, 96, 102, 103, 106, 108
Benzo Purpurine 6 B	12, 24, 41, 72, 102
Benzo Purpurine 10 B	18, 19, 22, 23, 24, 37, 38, 39, 41, 58, 60, 72, 92, 102
Benzo Sky Blue	5, 8, 9, 10, 11, 13, 15, 20, 21, 24, 35, 36, 37, 41, 46, 51, 52, 53, 54, 55, 57, 58, 60, 69, 67, 70, 72, 77, 78, 79, 83, 81, 85, 90, 92, 99, 106, 108, 110, 111, 114
Benzo Sky Blue 4 B	5, 24, 41, 95
Benzo Red Blue G	24, 41
Benzo Red Blue R	24, 41
Benzo Black	24, 41
Benzo Black S extra	24, 41, 72, 93, 96
Benzo Black Blue G	5, 24, 41, 58, 60, 70, 72, 76, 92, 102, 103, 104, 106, 108
Benzo Black Blue 5 G	5, 6, 7, 24, 26, 27, 87, 41, 58, 60, 70, 72, 76
Benzo Black Blue R	5, 24, 41, 58, 70, 72, 76, 92, 102, 103, 104

	Page
Benzo Black Brown	24, 41, 58, 70, 72, 92
Benzo Violet R 5, 6, 7, 8, 9, 12, 13, 15, 16, 17, 22, 23, 24, 25, 26, 41, 58, 63, 65, 70, 79, 102, 104, 112, 113, 114	55
Beta Naphthol	54
Bismarck Brown	54
Brilliant Alizarine Blue D in paste	48, 49
Brilliant Alizarine Blue S D	49, 50
Brilliant Azurine B	5, 24, 26, 27, 41, 58, 70, 92
Brilliant Azurine 5 G 5, 24, 28, 29, 34, 35, 41, 58, 70, 76, 95, 99, 101, 104, 108	103, 104, 108
Brilliant Benzo Blue 6 B 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 41, 56, 57, 58, 69, 60, 61, 62, 63, 65, 70, 72, 76, 80, 81, 82, 91, 92, 93, 94, 97, 99, 105, 106, 107, 108, 112, 113	103, 104, 108
Brilliant Congo G	12, 21, 41, 58, 60, 70, 72, 108
Brilliant Congo R 24, 41, 70, 72, 87, 88, 89, 101, 103, 104, 106, 108, 114, 115	104, 106, 108, 114, 115
Brilliant Geranine B 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 32, 33, 41, 46, 52, 53, 58, 60, 63, 65, 66, 67, 68, 69, 70, 72, 75, 76, 81, 82, 83, 87, 88, 89, 90, 91, 95, 96, 97, 99, 101, 102, 103, 108, 114	103, 104, 108, 114
Brilliant Geranine 3 B 12, 24, 41, 58, 60, 70, 72, 75, 76, 83, 92, 101, 102, 103, 106, 107, 108, 109	103, 104, 108, 109
Brilliant Green 20, 21, 30, 31, 33, 34, 35, 37, 38, 39, 53, 63, 65, 80, 81, 91, 94, 100	103, 104, 108, 109
Brilliant Orange G	24, 41
Brilliant Purpurine R	24, 41, 42, 43, 58, 60, 61, 62, 102, 104
Brilliant Rhoduline Red B D	80, 85, 36, 44
Brilliant Sulphon Azurine R 5, 24, 41, 85, 86, 87, 95, 96, 101, 102, 104, 108	95, 101, 102, 104, 108
Brilliant Yellow	5
Bronze Prints	22, 23
Chicago Blue B	24, 41, 58, 72, 92
Chicago Blue R	24, 41, 58, 72, 92
Chloramine Brown G 5, 12, 24, 41, 60, 70, 72, 74, 75, 76, 57, 88, 89, 101, 102, 103, 104	103, 104, 106, 108
Chloramine Yellow 5, 7, 8, 9, 10, 11, 12, 13, 15, 40, 44, 45, 46, 47, 49, 51, 52, 53, 60, 61, 62, 67, 68, 69, 70, 72, 74, 75, 76, 77, 83, 87, 88, 89, 92, 95, 101, 102, 103, 104, 103, 112, 113	103, 112, 113
Chloramine Orange G 5, 8, 9, 24, 41, 46, 47, 49, 52, 60, 70, 72, 71, 75, 92, 95, 101, 102, 103, 104, 106	103, 104, 106, 108
Chromate of lead	57, 59
Chrome Blue	80
Chrysamine G 5, 8, 9, 12, 18, 19, 41, 70, 71, 72, 73, 70, 92, 93, 103, 104, 106, 108	103, 104, 106, 108
Chrysamine R 5, 12, 41, 92, 103, 104, 106, 108, 110, 111	103, 104, 106, 108
Chrysamine G S	41
Chrysamine R S	41
Chrysophenine 5, 10, 11, 13, 17, 18, 19, 20, 21, 21, 25, 29, 38, 39, 41, 42, 43, 46, 47, 48, 49, 52, 53, 60, 70, 72, 74, 75, 76, 83, 85, 86, 87, 90, 91, 92, 93, 95, 99, 102, 103, 104, 107, 108, 109, 114, 115	103, 104, 106, 108
Chrysophenine G S	41
Cochineal Scarlet P S	92
Celestine Blue	80
Congo Corinth B	24, 41, 93, 96, 97, 102
Congo Corinth G 5, 12, 21, 26, 27, 41, 58, 60, 72, 92, 95, 96, 97, 99, 102, 106, 107, 108, 109	95, 96, 97, 99, 102, 106, 107, 108, 109
Congo Orange G 5, 12, 13, 15, 16, 17, 18, 19, 24, 28, 29, 33, 41, 46, 49, 50, 58, 60, 61, 62, 64, 65, 70, 72, 74, 73, 83, 85, 86, 88, 89, 90, 91, 92, 96, 103, 104, 112, 113	103, 104, 112, 113
Congo Orange R 20, 21, 24, 42, 43, 46, 58, 70, 72, 74, 91, 93, 108, 110, 111, 114, 115	103, 104, 112, 113
Congo Red	24, 41, 58, 72, 92
Congo Red G	24, 41
Congo Red 4 R	12, 21, 41
Congo Red G R	41

	Page
Congo Rubine	21, 41, 60, 72, 92
Croceine Scarlet 3 B	92
Curcumine S	43, 41, 44, 87, 88, 89, 89
Curcumine W	24, 41, 57, 88, 89
Delta Purpurine 5 B	24, 41, 58, 60, 70, 72, 83, 87, 92, 95, 102, 104, 105, 106, 107, 103, 114
Delta Purpurine 7 H	24, 41, 70
Delta Purpurine G	24, 41
Diamond Fuchsine	20, 21
Diamine Red B	24, 41
Diamine Red 3 B	24, 41
Diamine Black B O	100, 108
Diamine Black R O	100, 108
Dianisidine	10
Diazo Blue	24, 28, 27, 31, 33, 41, 58, 70, 93, 101, 102, 103, 104
Diazo Blue 3 H	24, 41, 70
Diazo Blue Black 5, 24, 41, 58, 70, 72, 74, 82, 95, 96, 101, 102, 103, 104, 114	101, 102, 103, 104, 114
Diazo Bordeaux	40, 101, 102, 103, 104
Diazo Brown G 24, 41, 58, 70, 72, 74, 101, 102, 103, 104	101, 102, 103, 104
Diazo Brown R extra 5, 58, 72, 101, 102, 103, 104	101, 102, 103, 104
Diazo Brown V	101, 102, 103, 104
Diazo Brilliant Black B 24, 41, 58, 74, 74, 95, 96, 101, 102, 103, 104	101, 102, 103, 104
Diazo Brilliant Black R	41, 58, 72, 74, 95, 96, 101, 103, 104
Diazo Navy Blue 3 B	24, 41, 72
Diazo Indigo Blue B	24, 41, 70
Diazo Red Blue 3 R 24, 41, 92, 101, 102, 103, 104	101, 102, 103, 104
Diazo Black B	5, 24, 37, 41, 70, 72, 74, 92, 101, 102, 103, 104
Diazo Black B H N 24, 41, 57, 58, 59, 60, 72, 74, 92, 101, 102, 103, 104	24, 41, 58, 70, 72, 74
Diazo Black 3 B	24, 41, 58, 70, 72, 74
Diazo Black G	102, 103, 104
Diazo Black H	40, 101, 102, 103, 104
Diazo Black R	24, 41, 58, 70, 72, 74, 92, 95, 101, 102, 103, 104
Diazo Black R extra	24, 41, 58, 70, 72, 74
Diazo Violet	24, 41, 70, 72
Diazurine B	21, 41, 101, 103, 104
Direct Blue Black B	10, 12, 13, 21, 26, 27, 41, 58, 60, 70, 72, 74, 92, 95, 96, 24, 41, 70, 72, 74, 92, 95, 96
Direct Blue Black N	24, 41, 70, 72, 74, 92, 114
Direct Bronze Brown	5, 24, 41, 58, 72
Direct Deep Black E	24, 41, 70, 72
Direct Deep Black E extra	24, 41, 70, 72
Direct Deep Black G 24, 41, 68, 69, 70, 72, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115	24, 41, 70, 72, 92
Direct Deep Black R W	24, 70
Direct Deep Black T 12, 24, 31, 33, 41, 58, 60, 61, 62, 63, 65, 70, 72, 74	62, 63, 65, 70, 72, 74
Direct Deep Black T N	24
Direct Fast Brown B 5, 10, 24, 41, 58, 72, 92, 114	5, 10, 24, 41, 58, 72, 92, 114
Direct Fast Brown G G	5, 24, 41, 72
Direct Yellow R 5, 40, 41, 60, 70, 72, 75, 92, 101, 102, 103, 104	5, 40, 41, 60, 70, 72, 75, 92, 101, 102, 103, 104
Developing baths	26, 81
Developer E S	10
Emerald Green	54
Eosine	114
Fast Acid Blue B	100, 114
Fast Acid Violet 10 B	97, 100
Fast Black	15, 16, 17, 32, 33
Fast Green bluish, extra bluish	100
Fast Light Green	100
Ferrocyanide Blue	30
Geranine B B	24, 33, 39, 41, 58, 76, 87, 102, 104

	Page
Geranine G	5, 6, 7, 8, 9, 10, 11, 16, 17, 20, 21, 24, 26 27, 37, 41, 46, 48, 49, 50, 51, 53, 58, 60, 61 62, 70, 72, 74, 75, 76, 77, 78, 79, 83, 84, 85 88, 87, 88, 89, 91, 92, 93, 96, 97, 100, 105 106, 107, 108, 110, 111, 112, 113, 114
Heliotrope	24, 41, 72, 101, 102, 108
Heliotrope B B	5, 18, 19, 24, 34, 35, 37, 41, 52, 58, 67 70, 83, 95, 96, 97, 102, 101, 108, 112, 113
Hessian Brilliant Purple B	41
Hessian Brown B	5, 40, 41
Hessian Brown B B	5
Hessian Brown M M	5
Hessian Purple B	41, 92
Hessian Purple N B	41
Hessian Purple N	24, 41, 92, 102, 104
Hessian Yellow	41
Ice Black	10, 11
Ice Blue	10, 11
Ice Bordeaux	10, 11, 55
Ice Red	10, 11
Indian Yellow G	92
Indigo	49, 68, 69
Induline B	98
Induline 6 B	98
Imperial Green G I	54
Katigene Black Brown	40, 44, 58
Lazuline Blue R	92
Logwood Black	88, 89
Mercerisations Tables of the Benzidine Colours	60
Methylene Blue B B	20, 21, 30, 37, 38, 39, 45, 55, 96, 97, 98, 114, 115
Methyl Green	54
Methyl Violet	37
Methyl Violet 1 B	54
Methyl Violet 2 B	20, 21, 30, 100
Methyl Violet 6 B	32, 33, 80, 81
Mikado Brown B	24, 41, 58, 70, 72, 74
Mikado Brown G	21, 41
Mikado Orange	5, 46, 60, 70
Mikado Orange G	72, 74, 75, 103, 104
Mikado Orange R	41, 102, 103, 104
Mikado Orange 2 R	41
Mikado Orange 3 R	12, 24, 41
Mikado Orange 4 R	12, 24, 41
Mikado Orange 5 R	24, 41
Mikado Orange R O	41
Mikado Orange 2 R O	41
Mikado Orange 3 R O	24, 41
Mikado Orange 4 R O	24, 41
Mikado Orange 5 R O	24, 41
Mikado Yellow	5, 40, 41, 60, 70, 72, 75, 78, 92
New Methylene Blue 3 R	91, 93
New Toluyene Brown M	110, 111
New Victoria Blue B	52, 58, 54, 92

	Page
Orange G T	92
Orange T A	92
Patent Moss Green	22, 23
Persian Berry Extract	30, 55
Persian Berry Yellow Discharge	31, 92, 33, 35, 36, 37, 57
Pluto Black B	5, 10, 22, 23, 24, 26, 27, 41, 42, 43 58, 70, 72, 74, 80, 81
Pluto Black G	5, 24, 41, 58, 70, 72, 74, 92
Pluto Black R	5, 24, 41, 58, 70, 72, 74
Pyronine G	20
Quinoline Yellow	98, 100, 114
Red P R	40, 44, 45, 70, 72, 74
Reichgold Flora fine	22, 23
Rhodamine B	30, 54
Rhodamine G	30
Rhodamine 6 G	22, 33, 34, 35, 56, 57, 64, 65, 80, 81, 91 98, 94
Rhodamine S	20
Rhoduline Red B	98
Rhoduline Red G	30, 45, 98
Rhoduline Violet	30, 31, 33, 91, 93, 98, 114, 115
Rosazurine B	24, 41, 70, 83, 95 101, 102, 104, 106, 108, 110, 111
Rosazurine G 24	41, 58, 70, 72, 96, 101, 102, 104, 106, 108
Rouge vif E N (Pigment Red)	57, 59
Saffranine F F extra	30, 35, 36, 45, 98, 100
Steam Black	38, 39
Sulphon Azurine D	87, 88, 89, 96, 101, 102, 103, 101, 108
Sulphon Black	92
Sulphon Blue Black	91, 92, 94
Sulphon Cyanine G R extra	91, 92, 94
Thiazole Yellow	5, 6, 7, 40, 44, 58, 63, 61, 62, 92, 106
Toluyene Brown B	5, 12, 21, 23, 27, 41, 58, 60, 70, 72 90, 92, 102, 104, 114
Toluyene Brown B B O	5, 24, 41, 58, 72, 103, 107, 108, 109
Toluyene Brown M	5, 12, 24, 41, 58, 60, 72, 90, 92
Toluyene Brown R	5, 12, 24, 41, 58, 60, 72, 90, 92 102, 104, 106, 108
Toluyene Orange G	10, 11, 12, 35, 39, 41, 48, 60, 70 72, 74, 92, 104
Turquoise Blue B B	52, 53, 54
Turquoise Blue G	54
Viscose	66, 67
White Discharge with tin	25, 28, 34, 35
White Discharge with zinc powder	42, 43
Yellow P R	5, 35, 36, 40, 44, 45, 60, 70, 72 101, 102, 103, 101
Yellow P R, developed with Developer B	40
Zink White	66, 67

Cotton Printing.

For Cotton Printing we further recommend the following approved dyestuffs:

- a. **Basic Dyestuffs** (with tannic acid)
- b. **Mordant Dyestuffs** (with alumina, chrome, iron, nickel, zink)
- c. **Ice Colours.**

Red Dyestuffs:

a.
Brilliant Rhoduline Red BD in paste
Diamond Fuchsine
Pyronine G
Rhodamine B, G, S
Rhoduline Red, B, G
Saffranine FF extra.
b.
Alizarine Red (bluish to yellowish) (alumina)
Alizarine Purpurine in paste (alumina)
Brilliant Chrome Red in paste (chrome)
Chrome Red (chrome)
Eosine (chrome)
Rhodamine, B, G, S (chrome).
c.
Parantraniline (β -Naphтол or Naphтол L C).

Orange Dyestuffs:

b.
Alizarine Orange (alumina)
Alizarine Yellow R (chrome)
Chrome Orange (chrome)
Diamond Orange (chrome).

Yellow Dyestuffs:

a.
Auramine II.
b.
Alizarine Yellow 3 G (chrome)
Anthracene Yellow in paste (chrome)
Chrome Yellow D (chrome)
Chrome Yellow R extra in paste (chrome)
Diamond Flavine in paste (chrome)
Diamond Yellow in paste (chrome).

Green Dyestuffs:

a.
Brilliant Green
China Green
Emerald Green
Imperial Green
Methyl Green
Turquoise Blue BB, G.
b.
Alizarine Viridine (chrome)
Azo Green in paste (chrome)
Chrome Green (chrome)
Coeruleine S (chrome).

Blue Dyestuffs:

a.
Blue 8336 (Navy Blue)
Cotton Blue I-VI
Methylene Blue BB
New Blue G

New Fast Blue F
New Victoria Blue B
Victoria Blue B.
b.
Alizarine Blue S, SR paste and powder
(chrome, nickel, zinc)
Alizarine Cyanine G, R paste (chrome)
Alkali Blue (chrome)
Brilliant Alizarine Blue G, R, S1), D paste
(chrome)
Celestine Blue B (chrome)
Chrome Blue paste (chrome)
Gallamine Blue (chrome)
Victoria Blue B (chrome).
c.
Diamisidine (β -Naphтол).

Violet Dyestuffs:

a.
Methyl Violet 5R to 7B
Rhoduline Violet.
b.
Alizarine Bordeaux BP paste (chrome)
Alizarine Red I, I extra (iron)
Galleine (chrome)
Galloycyanine paste.

Brown and Bordeaux Dyestuffs:

a.
Bismarck Brown FF, F, R extra, R, M.
b.
Alizarine Bordeaux BP, GP paste (alumina)
Alizarine Cardinal paste (alumina)
Alizarine Orange (chrome)
Alizarine Purpurine paste (chrome)
Alizarine Red (yellow-blue shade) (chrome)
Anthracene Brown GG, G, R, W paste (chrome)
Chrome Brown R paste (chrome)
Chrome Bordeaux (Chrome)
Chrome Bordeaux 6B double (chrome)
Chrome Prune (chrome)
Chrome Rubine (chrome)
Diamond Brown G (chrome).
c.
Alpha Naphthylamine (β -Naphтол)
Benzidine (β -Naphтол)
Mononitro Benzidine (β -Naphтол).

Grey Dyestuffs:

a.
New Fast Grey
New Grey P paste.
b.
Alizarine Blue Black B paste (chrome)
Alizarine Cyanine Black G paste (chrome)
Alizarine Fast Grey paste (chrome).

Black Dyestuffs:

a.
Jute Black.
b.
Alizarine Blue Black B paste (chrome)
Alizarine Bordeaux BP paste (chrome)
Alizarine Cyanine Black G paste (chrome)
Alizarine Fast Grey paste (chrome)
Chrome Black (chrome).
c.
Benzidine (Developer ES).

Wool and Half Wool Printing.

For printing wool and half wool we recommend the following approved dyestuffs:

- a. Acid Dyestuffs
- b. Mordant Dyestuffs (chrome or alumina)
- c. Basic Dyestuffs.

Red Dyestuffs:

a.

Acid Magenta
Azo Bordeaux
Azo Crimson S
Azo Eosine
Azo Fuchsine B, G, G extra
Bordeaux B X, extra
Brilliant Double Scarlet 3 R
Brilliant Ponceau 5 R
Carmoisine B
Cochineal Scarlet P S
Croceine Scarlet 2 B, 3 B X, 7 B, 10 B
Double Ponceau 4 R
Eosine S extra bluish (for pink)
Fast Acid Magenta B
Fast Red A, B T, E, N S
New Cocaine
Orseille B B
Ponceau 3 R
Rhodamine B, G (for pink)
Wool Ponceau 2 R

b.

Alizarine Purpurine paste (alumina)
Alizarine Red II A B 20% (alumina)
Alizarine Red W powder (alumina)
Anthracene Red (chrome)
Cloth Red B (chrome)

c.

Rhoduline Red B, G
Saffranine F F extra.

Orange Dyestuffs:

a.

Croceine Orange G, R
Eosine S extra yellowish
Orange II B.

b.

Alizarine Orange (alumina).

Yellow Dyestuffs:

a.

Fast Yellow extra
Indian Yellow G, R
Metanil Yellow
Naphtol Yellow S
Quinoline Yellow.

b.

Alizarine Yellow 3 G (chrome)
Anthracene Yellow (chrome)
Chrome Yellow D, R extra (chrome)
Diamond Flavine G (chrome).

c.

Auramine II.

Green Dyestuffs:

a.

Acid Green B B, 3 B, G G
Alizarine Cyanine Green K, G extra paste
Fast Green bluish, yellowish
Fast Green extra bluish
Fast Light Green

b.

Alizarine Cyanine Green G extra, E paste
Chrome Green (chrome) [(chrome)]
Coeruleine (chrome).

c.

Brilliant Green
Turquoise Blue G.

Blue Dyestuffs:

a.

Alizarine Sapphirole
Alkali Blue I B-7 B
Azine Blue
Brilliant Alizarine Cyanine G, 3 G
Carmine Blue B, G
Fast Acid Blue B
Fast Acid Violet 10 B
Fast Blue greenish
Induline B, 6 B greenish
Navy Blue
New Patent Blue 4 B.

b.

Alizarine Blue S, SR paste and powder
Alizarine Cyanine (chrome) [(chrome)]
Alizarine Sapphirole (chrome)
Brilliant Alizarine Blue G, R (chrome)
Brilliant Alizarine Cyanine G, 3 G (chrome)
Chrome Blue (chrome)
Gallamine Blue (chrome).

c.

Blue 8336 (Navy Blue)
New Victoria Blue B
Victoria Blue B

Violet Dyestuffs:

a.

Acid Violet 3 B extra, 4 B G extra, 4 B extra,
5 B, 6 B, 8 B extra, 4 R S, 6 B N,
1 R extra, 2 R, 3 R.

Alkali Violet R

Azo Acid Violet B extra, R extra
Azo Acid Violet 4 R
Victoria Violet 5 B.

b.

Celestine Blue B (chrome)
Galléine (chrome).

c.

Methyl Violet 5 R-7 B.

Brown Dyestuffs:

a.

Azo Acid Brown.

b.

Alizarine Cardinal (chrome)
Alizarine Orange (chrome)
Alizarine Red II A B 20% (chrome)
Alizarine Red W powder (chrome)
Anthracene Brown (chrome)
Chrome Brown (chrome).

c.

Bismarck Brown.

Grey Dyestuffs:

a.

Nigrosine B.

c.

New Fast Grey
New Grey P paste.

Black Dyestuffs:

a.

Diamond Black F
Victoria Black B, G.

b.

Alizarine Cyanine Black G (chrome)
Alizarine Blue Black B (chrome).
Alizarine Fast Grey (chrome).

c.

Jute Black B.

Silk and Half Silk Printing.

For printing silk and half silk we recommend the following approved dyestuffs:

- a. **Basic Dyestuffs** (with tannic acid)
- b. **Mordant Dyestuffs** (with chrome or alumina)
- c. **Acid Dyestuffs.**

Red Dyestuffs:

a.
Brilliant Rhoduline Red BD paste
Diamond Fuchsine
Rhodamine B, G
Rhoduline Red B G
Saffranine FF extra.

b.
Alizarine Red SX extra (alumina)
Alizarine Red W powder (alumina)
Alizarine Red 1P (alumina)
Brilliant Chrome Red (chrome)
Chrome Red (chromel).

c.
Anthracene Red
Azo Bordeaux
Azo Fuchsine G
Azo Crimson S
Brilliant Croceine
Brilliant Double Scarlet 3R
Brilliant Ponceau 5R
Carmoisine B
Cochineal Scarlet PS
Croceine Scarlet 3B X, 2B X
Double Ponceau 4R
Fast Red NS
Fast Acid Magenta B
Imperial Scarlet 3B
New Cocaine.

Orange Dyestuffs:

b.
Alizarine Orange (alumina)
Chrome Orange (chromel).

c.
Orange 11 B.

Yellow Dyestuffs:

a.
Auramine 11.
b.
Anthracene Yellow (chrome)
Chrome Yellow D (chrome)
Chrome Yellow R extra (chrome)
Diamond Flavine G (chrome)
Diamond Yellow (chrome).

Green Dyestuffs:

a.
Brilliant Green
China Green
Emerald Green
Imperial Green
Methyl Green
Turquoise Blue BB, G.
b.
Alizarine Cyanine Green G extra (chrome)
Chrome Green (chrome)
Coeruleine (chrome).

c.
Acid Green G G
Fast Green bluish
Fast Green extra bluish
New Patent Blue B.

Blue Dyestuffs:

a.
Blue 8336 (Navy Blue)
Methylene Blue BB
New Blue
New Fast Blue F.
b.
Alizarine Blue S, SR paste and powder
Alizarine Cyanine GG (chrome) [(chrome)
Brilliant Alizarine Blue G, SD (chrome)
Chrome Blue paste (chrome).

c.
Azo Acid Blue 4B
Fast Acid Blue B
Fast Acid Violet 10 B
Induline B, 6B
Intensive Blue
New Patent Blue 4B
Silk Blue BE S
Soluble Blue red shade extra strong
Sulphon Acid Blue B, R.

Violet Dyestuffs:

a.
Methyl Violet 5R-7B
Rhoduline Violet.
b.
Alizarine Bordeaux BP paste (chrome)
Alizarine Cyanine R paste (alumina)
Chrome Violet paste (chrome)
Galleine paste (chrome).
c.
Acid Violet 5B, R extra, 2R, 3R
Azo Acid Violet R extra
Victoria Violet 5B.

Brown and Bordeaux Dyestuffs:

a.
Bismarck Brown F, FF, R extra, R, M.
b.
Alizarine Bordeaux paste (alumina)
Alizarine Orange (chrome)
Alizarine Red 11A B (chrome)
Alizarine Red W powder (chrome)
Anthracene Brown (chrome)
Chrome Bordeaux (chrome)
Diamond Brown G (chrom.).

Grey Dyestuffs:

a.
New Fast Grey
New Grey paste.

Black Dyestuffs:

a.
Jute Black.
b.
Alizarine Cyanine Black G (chrome).

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