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COLORING PELTS, FURS, HAIRS, FEATHERS, AND PRODUCTS MANUFACTURED FROM THESE MATERIALS

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28 Claims. (Cl. 8—5)

The present invention relates to a new process for dyeing pelts, furs, hairs, feathers and products manufactured of these materials, such as, for instance, hair-felts. More particularly it relates to such a process in which the dyeings are produced with the aid of several dyeing substances.

A known mode of dyeing pelts and similar materials various tints from yellow to black consists in bringing the pelt in suitably prepared condition into a bath which contains, besides a suitable oxidizing agent, a mixture of certain aromatic diamines and/or aromatic hydroxy compounds or of suitable substitution products of these substances. These dyeing agents are used, for instance, in form of free bases, as salts of inorganic acids in a neutral dyeing bath, or with addition of ammonia; hydroxy compounds, often, are employed together with caustic alkalies. When preparing the dye baths, the specific chemical behavior of the different pelt dyes of this kind is to be regarded. Thus, for instance, the hardness of the water plays an essential part if the bath is set with salts of aromatic amines with an inorganic acid. Furthermore, the possibility of shading the final tints by addition of other fur dyes is limited inasmuch as in many cases not the sum of the individual tints of the components is exhibited, but a reaction between the dye components causes an undesired shading. In this connection it may be mentioned that a mixture of certain meta-diamines and para-diamines produces when dyed on pelts in the usual manner blue-colored indamines which are comparatively unstable and easily change to another color, generally red, for instance, when the pelt is hot-ironed or during storage. Moreover, such oxidation dyes give undesirably dark-colored fleshsides. In consequence of their free tendency to react with other dyes suitable for pelts, a shading towards blue can be obtained only exceptionally with the aid of these dyes.

Mixtures of known dyes suitable for pelts and dyeings produced therewith often sublime and are not stable in store. Moreover, in solutions of the mixtures, in consequence of the differing solubility of the components, there occur variations in the concentration of the dye-bath which interfere with uniform dyeing, so that it becomes difficult for the dyer to obtain in every case the same tint and color strength.

All these defects are reduced to a minimum and uniform, very beautiful and stable dyeings are obtainable when using in the dyeing operation a salt-like compound or mixture of such compounds which is formed of polyhydroxy compounds of the benzene series, a hydroxy-, aminohydroxy-, halogenohydroxy-, halogenohydroxyamino compound of the naphthalene series, which may be substituted by an inert group such as alkyl, alkoxy and aralkyl and from an aromatic base. These salts exhibit, besides their good stability in store, a remarkable affinity to hair, so that the flesh side of the pelt is to some extent reserved from the dye and they dissolve in water in such a manner that the dye bath always contains the salt components in the desired ratio. There is the certainty that the dyer will obtain in every case the same tint and color strength.

As "acid" constituent of the said salts there may be enumerated: 1.2-, 1.3-, 1.4-dihydroxybenzene, 1.2-, 1.3-, 1.5-, 1.6-, 1.7-, 1.8-, 2.6-, or 2.7-dihydroxynaphthalene, 4-chloro-1-hydroxynaphthalene, 2.4-dichloro-1-hydroxynaphthalene, 1.6-dihydroxy-5-nitronaphthalene, 1-amino-5-hydroxynaphthalene, 1.5-dihydroxy-2-aminonaphthalene, 2-amino-7-hydroxynaphthalene, 1-amino-8-hydroxynaphthalene, 1-amino-5-hydroxy-8-chloronaphthalene.

The "basic" substituent of the salts is an amine of the aromatic or heterocyclic series or a derivative or substitution product thereof. I enumerate, for instance: 1.3- or 1.4-diaminobenzene, as well as the chloro- and nitro substitution products thereof, N-mono- or dialkyl- or aralkyl-substituted derivatives of the 1.3- and 1.4-diamino-

benzene, and their derivatives substituted in the nucleus by chlorine, nitro, alkyl, alkoxy and so on; then aminodiphenylamine which likewise may be substituted by alkyl-, cycloalkyl-, aralkyl-, hydroxyalkyl- or alkoxy groups or the corresponding compounds of the 4.4'-diaminodiphenylamine; then 1.4-, 1.5-, 2.4-, 2.7-diaminonaphthalene, benzidine, 2-aminobenzidine, dianisidine, and their derivatives substituted in the amino group or in the nucleus. From the heterocyclic series I enumerate: 8-aminoquinoline, 8-aminoquinaldine, 5.8-diaminoquinoline and 3-aminocarbazole. From the "acid" constituents, enumerated above, those hydroxy compounds being substituted by an amino group, may act as "basic" constituent in combination with an acid hydroxy compound.

The salt-like addition products used as pelt dyes according to my invention, are readily prepared in the manner described in "Organische Molekulverbindungen" by Paul Pfeiffer, 2nd Edition, page 270–271, or Liebig's Annalen, Vol. 438, page 74 et seq., by dissolving the amine and the hydroxy compound in equimolecular proportions in an appropriate solvent, mixing the solution and, if necessary, eliminating the solvent.

The salt-like compounds of this kind dye mordanted or unmordanted materials, such as pelts, in conjunction with an oxidizing agent, different shades, whereat in the most cases the flesh side is less strongly colored than the hair side. The tints produced are fast to ironing and mostly very fast to the action of light. Brown tints are obtainable which are distinguished by their excellent fastness to light, to rubbing, transpiration and sublimation. Furthermore, the salts in question do not react with known oxidation dyes, but may be shaded with them. By combining blue and brown dyeing salts, black tints are obtainable showing an excellent fastness; while the hair side is colored deeply black, the flesh side is blue.

If the said compounds used as oxidation dyes, are only sparingly soluble in water, the necessary degree of dispersion of the dye in preparing the dye bath, is obtained by addition of a substance having capillary activity. This is especially recommendable when use is made of a highly concentrated dye bath for deep tones. As substances having capillary activity there may be used nearly all wetting agents and emulsifying agents described in the relative literature. For example, Turkey red oil or highly sulfonated products of this kind; sulfonated aliphatic hydrocarbons from brown coal-tar, for example sulfonated solar oil; water soluble condensation products of unsaturated fatty acids with sulfonic acids of aromatic oxy compounds (compare German Specification No. 538,762); sulfonated alkylnaphthalenes, aliphatic alcohol sulfonates or the like.

If the salts or the mixtures of pelt dyes are wetted only with difficulty, the wetting character of the added substance may be enhanced with the assistance of a small proportion of an organic solvent, so that in all cases there is obtained a sufficient degree of dispersion of the new oxidation dyes, accessible for use as may be needed in practice even in high concentration.

In addition to the aforesaid properties of the substances having capillary activity, the latter are also of value in that the hair is thereby made still more receptive of the dye and the reserving of the flesh side is still further improved.

The present application is a continuation-in-part of my applications Serial Nos. 741,876 and 741,877, filed August 28, 1934.

The following examples illustrate the invention, the parts being by weight:—

Example 1.—2 parts of the salt made from 1.5-dihydroxynaphthalene and 4-aminodiphenylamine are dissolved in 1000 parts of water and the solution is mixed with 20 parts of hydrogen peroxide solution of 3 per cent. strength. An iron-salt mordanted, white rabbit's skin dyed in this bath for 3 hours produced a black-blue hair and a full blue flesh side.

Example 2.—2 parts of the salt made from 1.5-dihydroxynaphthalene and 4-methoxy-4'-aminodiphenylamine are dissolved in 1000 parts of water and the solution is mixed with 20 parts of hydrogen peroxide solution of 3 per cent. strength. A chromium salt mordanted lambskin dyed in this bath for 3 hours produced a black-blue hair and a full blue flesh side.

Example 3.—2 parts of the salt made from 1.6-dihydroxynaphthalene and 4-methyl-3-aminodiphenylamine are dissolved in 1000 parts of water, and the solution is mixed with 20 parts of hydrogen peroxide of 3 per cent. strength. A chromium mordanted lambskin dyed in this bath for 3 hours is dyed olive-brown tints.

Example 4.—1 part of the salt of 1.5-dihydroxynaphthalene with 8-aminoquinoline is dissolved in 1000 parts of water and the solution is mixed with 10 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with a chromium salt and dyed in this bath for 3 hours has a deep wine red hair and a light red flesh side.

Example 5.—1 part of the salt of 2.7-dihydroxynaphthalene with para-aminodimethylaniline is dissolved in 1000 parts of water and to the solution are added 10 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with an iron salt and dyed for 3 hours in this bath exhibits a full moleskin gray.

Example 6.—1 part of the salt of 2.6-dihydroxynaphthalene with para-aminodimethylaniline is dissolved in 1000 parts of water and to the solution are added 10 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with a chromium salt and dyed for 3 hours in this bath exhibits a deep green hair and a light blue green flesh side.

Example 7.—1 part of the salt of 4-chloro-1-hydroxynaphthalene and 4-aminodiphenylamine is dissolved in 1000 parts of water and to the solution are added 10 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with a chromium salt and dyed for 5 hours in this bath exhibits a deep blue hair.

Example 8.—1 part of the salt of 2.4-dichloro-1-hydroxynaphthalene with 1.4-diaminobenzene is dissolved in 1000 parts of water, and to the solution are added 10 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with a chromium salt and dyed for 5 hours in this bath exhibits a violet hair.

In a similar way the salts enumerated in the following table are suitable to be dyed, whereby

tints, likewise indicated in this table, are obtainable.

Salt consisting of:	Tints	
	On chromium mordant	On iron mordant
1.5-dihydroxynaphthalene and 1-methyl-2.4-diaminobenzene.	Full bluish brown.	----------
1.5-dihydroxynaphthalene and 1-methoxy-2.4-diaminobenzene.	Violet brown	----------
1.5-dihydroxynaphthalene and 1-nitro-2-dimethylamino-4-aminobenzene.	Clear yellow brown.	Yellowish beige.
1.5-dihydroxynaphthalene and 1.4-diamino-2-dimethylamino-benzene.	Dark brown	----------
1.5-dihydroxynaphthalene and 4-amino-4'-dimethylaminodiphenylamine.	Bluish green	----------
1.5-dihydroxynaphthalene and 2-aminobenzidine.	Full red brown	Beige.
1.5-dihydroxynaphthalene and 3-aminocarbazole.	Reddish grey	----------
1.6-dihydroxynaphthalene and 1-chloro-2-monomethylamino-5-aminobenzene.	Black brown	----------
1.6-dihydroxynaphthalene and 1-nitro-2-dimethylamino-4-aminobenzene.	Yellow olive	----------
1.6-dihydroxynaphthalene and 1.5-naphthylendiamine.	Black brown	----------
1.6-dihydroxynaphthalene and 2.6-diaminonaphthalene.	Tobacco brown	----------
2.6-dihydroxynaphthalene and 1-nitro-2.4-diaminobenzene.	Olive brown	Greenish yellow.
2.7-dihydroxynaphthalene and 1.5-naphthylendiamine.	Reddish brown	----------
1.6-dihydroxynaphthalene and 1-amino-5-hydroxynaphthalene.	Dark brown	Beige.
1.5-dihydroxy-2-aminonaphthalene and 1.4-diaminobenzene.	Violet brown	Reddish brown.
1-amino-5-hydroxynaphthalene and 1.4-diaminobenzene.	Deeply blue	Reddish blue.
1-hydroxy-8-aminonaphthalene and 1.3-diaminobenzene.	Brown	----------
2-hydroxy-7-aminonaphthalene and 4.4' diaminodiphenylamine.	Greenish blue	Greenish blue.

As mentioned above, the dyeing capacity of the oxidation dyes in question can be further improved by adding a dispersing agent to the dye bath. This is shown in the following examples.

Example 9.—2 parts of a mixture of 40 parts of the salt from 1.5-dihydroxynaphthalene and 4-amino-4'-dimethylaminodiphenylamine and 60 parts of a wetting agent, made as described in German Specification No. 436,881 by condensation of a naphthalene sulfonic acid with benzylchloride, are together dissolved in 1000 parts of water and the solution is mixed with 20 parts of a hydrogen peroxide solution of 3 per cent. strength. A chromium mordanted white lambskin dyed for 3 hours in this bath at 30° C. exhibits a black-green hair side.

Example 10.—2 parts of a mixture consisting of 40 parts of the salt from 2.7-dihydroxynaphthalene and 4-aminodimethylaminobenzene with 60 parts of Turkey red oil are dissolved in 1000 parts of water and the solution is mixed with 20 parts of a hydrogen peroxide solution of 3 per cent. strength. In the course of 3 hours a white rabbit's skin mordanted with iron salt is dyed in this bath at 28° C. a full moleskin gray.

Example 11.—2 parts of a mixture consisting of 40 parts of the salt from 1.5-dihydroxynaphthalene and 4-aminodimethylaminobenzene, and 60 parts of an isopropylnaphthalene sulfonic acid are dissolved in 1000 parts of water and the solution is mixed with 20 parts of hydrogen peroxide solution of 3 per cent. strength. In the course of 3 hours a white lambskin mordanted with alum is dyed in this bath at 28° C. blue-gray.

Example 12.—2 parts of a mixture consisting of 40 parts of a salt from 2.6-dihydroxynaphthalene and 4-aminodimethylaminobenzene and 60 parts of an emulsifying agent, made by treating castor oil with 1-naphthyl-5-sulfonic acid in presence of sulfuric acid as described in German Specification No. 538,762, are dissolved in 1000 parts of water and the solution is mixed with 20 parts of a hydrogen peroxide solution of 3 per cent. strength. When dyed in this bath for 4 hours at 32° C. a white rabbit's skin, previously mordanted with a chromium salt, exhibits a deep green hair side.

Example 13.—2 parts of a mixture consisting of 40 parts of a salt from 2.7-dihydroxynaphthalene and 2.4-diaminomethylbenzene and 60 parts of Turkey red oil are dissolved in 1000 parts of water and the solution is mixed with 20 parts of a hydrogen peroxide solution of 3 per cent. strength. In this bath, at 30° C., a white lambskin mordanted with a chromium salt is dyed in the course of 3 hours a bluish-brown.

Example 14.—40 parts of the salt from 1.5-dihydroxynaphthalene and 4-aminodiphenylamine are mixed with 60 parts of a wetting agent made from solar oil (brown coal-tar oil) and xylene in the presence of fuming sulfuric acid as described in German Specification No. 552,328, Example 4. 2 parts of this mixture, together with 1 part of the salt from 2.6-dihydroxynaphthalene and 4-aminodimethylaminobenzene are dissolved in 1000 parts of water and the solution is mixed with 50 parts of a hydrogen peroxide solution of 3 per cent. strength. In the course of 5 hours a white lambskin mordanted with a chromium salt is dyed in this bath at 32° C. a full blue-black with a blue flesh side.

Example 15.—2 parts of a mixture consisting of 40 parts of the salt from 1.2-dihydroxybenzene and 1.4-diaminobenzene and 60 parts of Turkey red oil are dissolved in 1000 parts of water and 20 parts of hydrogen peroxide of 3 per cent. strength are added to the solution. A white rabbit's skin, mordanted with chromium salt, is dyed in this bath at 30° C. a moleskin gray in the course of 3 hours.

Example 16.—2 parts of a mixture consisting of 40 parts of the salt from 1.3-dihydroxybenzene and 4-aminodiphenylamine and 60 parts of isopropylnaphthalene sulfonic acid are dissolved in

1000 parts of water and 20 parts of hydrogen peroxide of 3 per cent. strength are added to the solution. A rabbit's skin mordanted with a chromium salt is dyed in this bath, at 30° C., a greenish deep-gray in the course of 3 hours.

Example 17.—2 parts of a mixture consisting of 40 parts of the salt from 1.4-dihydroxybenzene and 2-chloro-1.4-diaminobenzene and 60 parts of a wetting agent, made as described in German Specification No. 436,881 (compare Example 1) are dissolved in 1000 parts of water and 20 parts of a hydrogen peroxide solution of 3 per cent. strength are added. A white rabbit's skin, mordanted with a copper salt is dyed in this bath at 30° C. a brown in the course of 3 hours.

Example 18.—A mixture of 1.6 parts of the salt from 1.5-dihydroxynaphthalene and 4-aminodiphenylamine with 0.4 part of the salt from 1.3-dihydroxybenzene and 2-chloro-1.4-diaminobenzene and with 3 parts of a wetting agent, made as described in German Specification No. 436,881, is dissolved in 1000 parts of water and the solution is mixed with 20 parts of hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin, mordanted with a chromium salt, is dyed in this bath at 30° C. a full black with a blue flesh side in the course of 3 hours.

Example 19.—2 parts of a mixture consisting of 40 parts of a salt from 1.5-dihydroxynaphthalene and 1-amino-5-hydroxynaphthalene with 60 parts of Turkey red oil are dissolved in 1000 parts of water and the solution is mixed with 20 parts of a hydrogen peroxide solution of 3 per cent. strength. A white lambskin mordanted with a chromium salt is dyed in this bath at room temperature a dull red-brown in the course of 3 hours.

Example 20.—2 parts of a mixture consisting of 40 parts of a salt from 1.6-dihyroxynaphthalene and 1-amino-5-hydroxynaphthalene with 60 parts of Turkey red oil are dissolved in 1000 parts of water and to the solution are added 20 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin, mordanted with a chromium salt is dyed in this bath at room temperature a bluish dark brown, in the course of 3 hours.

Example 21.—40 parts of a salt from 1-amino-5-hydroxynaphthalene and para-aminodiphenylamine are mixed with 60 parts of a wetting agent made as described in German Specification No. 552,328 (Example 4). 2 parts of this mixture are dissolved in 1000 parts of water and to the solution are added 20 parts of a hydrogen peroxide solution of 3 per cent. strength. A white rabbit's skin mordanted with an iron salt is dyed in this bath at 30° C. a marine blue in the course of 3 hours.

Example 22.—10 parts of a mixture consisting of 2.4 parts of the salt from 1.5-dihydroxynaphthalene and 4-aminodiphenylamine, 1.28 parts of the salt from 1.5-dihydroxynaphthalene and 1-methyl-2.4-diaminobenzene, 0.32 part of the salt from 1.6-dihydroxynaphthalene and 4-dimethylamino-2-amino-1-nitrobenzene and 6 parts of a dispersing agent, consisting of sulfonated solar oil, are dissolved in 1000 parts of water. The solution is mixed with 1000 parts of a hydrogen peroxide solution. A lambskin mordanted with a chromium salt is dyed in this bath full greenish black shades, the flesh side being blue.

Example 23.—10 parts of a mixture consisting of 1.33 parts of the salt from 1.5-dihydroxynaphthalene and 4-aminodiphenylamine, 1.33 parts of the salt from 2.6-dihydroxynaphthalene and 4-amino-1-dimethylaminobenzene, 1.33 parts of the salt from 1.5-dihydroxynaphthalene and 1.3-diaminobenzene and 6 parts of Turkey red oil are dissolved in 1000 parts of water and the solution is mixed with a hydrogen peroxide solution of 3 per cent. strength. An Indian lambskin treated with a chromium mordant, is dyed in this bath a full blue black, the flesh side being light blue.

It is obvious that my invention is not limited to the foregoing examples or to the specific details given therein. I have given a great number of examples in order to illustrate the performance of the new dyeing method with characteristic representants of the different groups of salts. However, numerous other embodiments are possible, for instance, when using the derivatives and substitution products of the acid or basic constituents of the salts.

In a similar manner the dispersing agents mentioned in Examples 9 to 23 may be substituted by other capillaractive compounds. Besides the products of this kind mentioned in the examples, I may use, for instance, for the said purpose as mentioned above, sulfonated alkyl naphthalenes, aliphatic alcohol sulfonates, condensation products of cresol sulfonic acids or hydroxynaphthalene sulfonic acids with formaldehyde, esters of saturated or unsaturated fatty acids with polyglycol ethers or polyglycerines, sulfite cellulose waste liquor, and so on.

These possibilities are likewise indicated in my specification and I contemplate as included within my invention all such modifications and equivalents as fall within the scope of the appended claims.

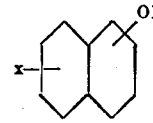
What I claim is:—

1. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula

$$R—OH\cdot H_2N\cdot R'$$

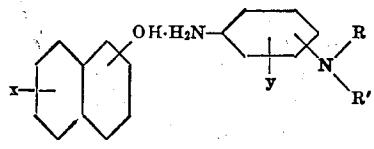
wherein R is a member of the group consisting of hydroxynaphthyl, halogenonaphthyl, nitrohydroxynaphthyl, aminonaphthyl, aminohydroxynaphthyl, halogenohydroxynaphthyl and halogenoaminonaphthyl, and R' is an amino compound of the group consisting of aminobenzenes and aminonaphthalenes.

2. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



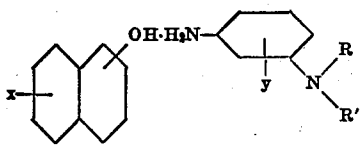
wherein R' is an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and x is a member of the group consisting of OH and NH_2.

3. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



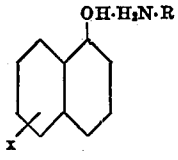
wherein R and R' are members of the group consisting of hydrogen, alkyl, aryl, *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen and NO_2, and *x* is a member of the group consisting of OH and NH_2.

4. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



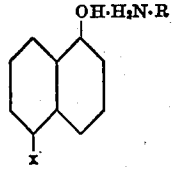
wherein R and R' are members of the group consisting of hydrogen, alkyl, aryl, *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen and NO_2, and *x* is a member of the group consisting of OH and NH_2.

5. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



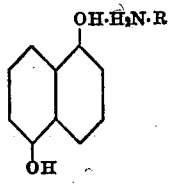
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and *x* is a member of the group consisting of OH and NH_2.

6. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



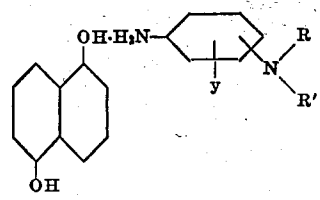
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and *x* is a member of the group consisting of OH and NH_2.

7. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



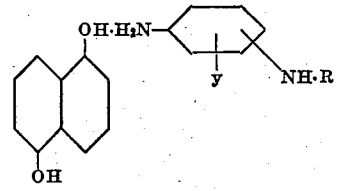
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes.

8. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



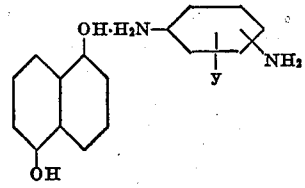
wherein R and R' are members of the group consisting of hydrogen, alkyl, phenyl, alkoxyphenyl, aminophenyl, and *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

9. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



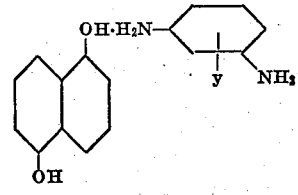
wherein R is a member of the group consisting of hydrogen, alkyl, phenyl, alkoxyphenyl, aminophenyl, and *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

10. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula



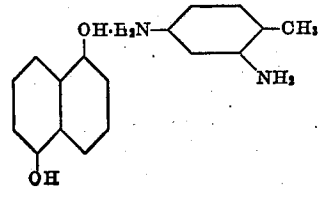
wherein *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

11. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the general formula

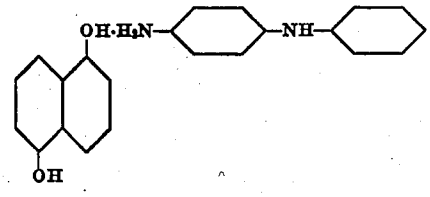


wherein *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

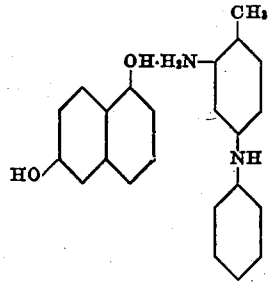
12. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the formula



13. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the formula



14. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent and a salt of the formula

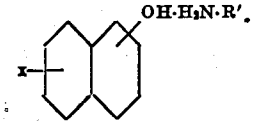


15. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula

$$R—OH\cdot H_2N\cdot R'$$

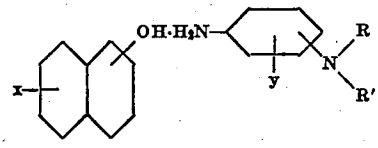
wherein R is a member of the group consisting of hydroxynaphthyl, halogenonaphthyl, nitrohydroxynaphthyl, aminonaphthyl, aminohydroxynaphthyl, halogenohydroxynaphthyl and halogenoaminonaphthyl, and R' is an amino compound of the group consisting of aminobenzenes and aminonaphthalenes.

16. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



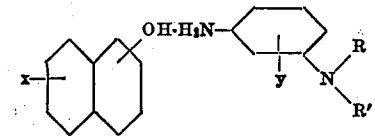
wherein R' is an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and x is a member of the group consisting of OH and NH_2.

17. The process of dyeing pelts, furs, feathers and materials manufactured from these products which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



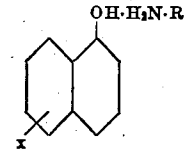
wherein R and R' are members of the group consisting of hydrogen, alkyl, aryl, y is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen and NO_2 and x is a member of the group consisting of OH and NH_2.

18. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



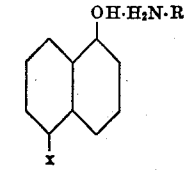
wherein R and R' are members of the group consisting of hydrogen, alkyl, aryl, y is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen and NO_2, and x is a member of the group consisting of OH and NH_2.

19. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



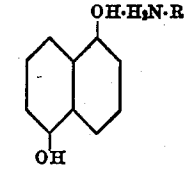
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and x is a member of the group consisting of OH and NH_2.

20. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



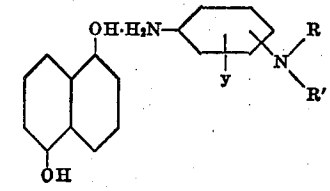
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes and x is a member of the group consisting of OH and NH_2.

21. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



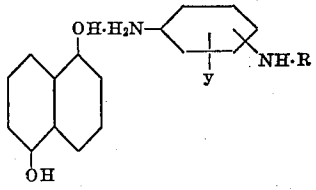
wherein R means an amino compound of the group consisting of aminobenzenes and aminonaphthalenes.

22. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



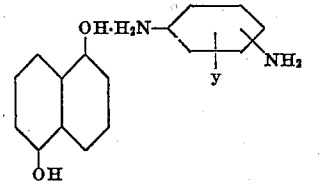
wherein R and R' are members of the group consisting of hydrogen, alkyl, phenyl, alkoxyphenyl, aminophenyl, and *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

23. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



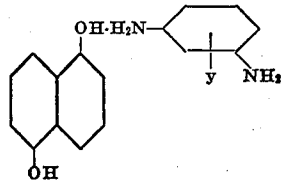
wherein R is a member of the group consisting of hydrogen, alkyl, phenyl, alkoxyphenyl, aminophenyl, and *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

24. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula



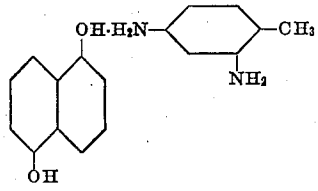
wherein *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

25. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the general formula

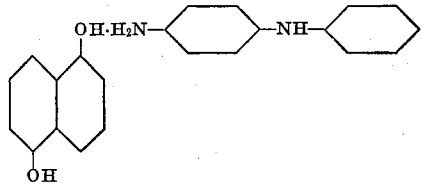


wherein *y* is a member of the group consisting of hydrogen, alkyl, alkoxy, halogen, NO_2.

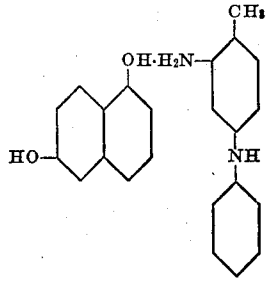
26. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the formula



27. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the formula



28. The process of dyeing pelts, furs, feathers and materials manufactured from these products, which comprises treating them in a bath containing an oxidizing agent, a dispersing agent, and a salt of the formula



ERICH LEHMANN.