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PROCESS FOR DYEING FURS, HAIRS, AND FEATHERS

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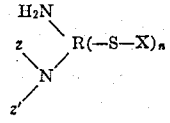
No Drawing. Application June 9, 1933, Serial No. 675,144, and in Germany May 6, 1932

9 Claims. (Cl. 8—5)

Application has been filed in Germany, May 6, 1932.

Our invention relates to a new process for dyeing furs, hairs and feathers.

We have found that for dyeing furs, hairs and feathers in the presence of an oxidizing agent there are suitable compounds which are derivatives of phenylalkylsulfides and which correspond to the general formula



in which R means phenyl or a substituted phenyl, such as halogenophenyl, alkylphenyl, hydroxyphenyl, alkoxyphenyl, X means alkyl or hydroxyalkyl, z and z' stand for hydrogen, alkyl or hydroxyalkyl and n for 1 or 2.

These substituted diamines of the benzene series may be used either alone—especially in the case of paradiamines—or together with other well known dyes for pelts and new shades are obtainable in this manner which could be obtained until yet, if at all, only by complicated dyeing processes.

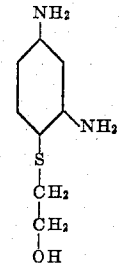
The manufacture of the sulfides in question may be carried out, for instance, according to well known processes by treating diamines or the corresponding nitro compounds containing a radicle capable of exchange with mercaptans followed, if necessary, by reduction of the nitro group or groups.

Thus, for instance, 2.4-dinitrochlorobenzene may be treated with ethylmercaptan. By treating the reaction product with a reducing agent 2.4-diaminophenylethylsulfide (1) is obtainable which, together with paraphenylenediamine, dyes furs bright black shades of greenish tinge which are not obtainable with other dyes.

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

Example 1.—3 parts of a mixture of 80 parts of paraphenylenediamine and 20 parts of 2.4-diaminophenylethylsulfide (1) are dissolved in the form of their salts with hydrochloric acid in 1000 parts of water. Ammonia is added for binding the hydrochloric acid and 30 parts of hydrogen superoxide solution are allowed to run in the dyeing bath. White rabbit skin mordanted with a chromium, copper or iron salt is dyed in this bath after 3 hours in bright clear black shades of greenish tinge.

Example 2.—White rabbit skin mordanted with a chromium or copper salt is treated with an aqueous solution, 1000 parts of which contain 3 parts of a mixture consisting of 80 parts of paraphenylenediamine and 20 parts of 2.4-diaminobenzenehydroxyethylsulfide (1) of the formula

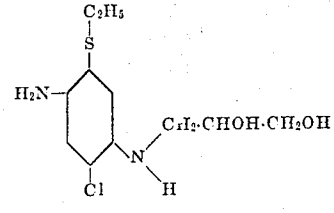


and 30 parts of a 3% hydrogen superoxide solution. After 3 hours the skin is dyed a clear, somewhat greenish black.

Example 3.—The skin is treated with an aqueous solution, 1000 parts of which contain 2 parts of 2.5-diamino-1-methoxyphenylethylsulfide (4) and 20 parts of a 3% hydrogen superoxide solution. A skin mordanted with chromium salts is dyed a dull bluish red brown; skin mordanted with copper salts a greyish brown, skin mordanted with iron salts a dark grey.

2.5 - diamino - 1 - chlorophenylethylsulfide (4) yields similar tints having a somewhat yellowish tinge.

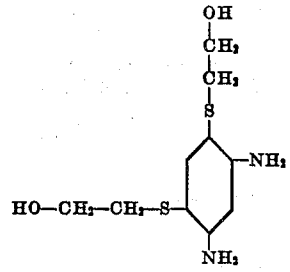
Example 4.—White rabbit skin mordanted with a copper salt is treated with an aqueous solution 1000 parts of which contain 3 parts of 5-amino-2-dihydroxypropylamino-1-chlorophenylethylsulfide (4) of the formula



and 30 parts of a 3% hydrogen superoxide solution. The skin is dyed a clear yellowish brown.

Diamines containing twice the thioether radicle are likewise suitable for dyeing furs, hairs and feathers and we enumerate, for instance,

1.3-diaminophenyldi(ethylsulfide) (4.6) and 1.3-diaminophenyldi(hydroxyethylsulfide) (4.6) of the formula



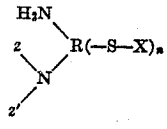
which are obtainable by treating dinitrodichlorobenzene with ethylmercaptan or hydroxyethylmercaptan and by reducing the nitro groups.

It is obvious that our invention is not limited to the foregoing examples or to the specific details given therein. Thus, the dyeing of the furs may be carried out in a neutral, an acid or an alkaline dyeing bath. The thioethers of the diamines in question may contain in the benzene nucleus other substituents than those indicated in the examples. As such substituents we enumerate the hydroxy group and the alkyl group. One of the amino groups may be substituted by alkyl or hydroxyalkyl radicles to form a secondary or tertiary amine. On the other hand, instead of ethyl or hydroxyethyl there may be bound with the sulfur another alkyl or mono- or polyhydroxyalkyl radicle.

As may be seen from Examples 1 and 2, we prefer to us the thioethers of metadiamines together with other dyes for furs and we have exemplified this possibility by mentioning paraphenylenediamine. As other dyes which may be used in combination with the thioethers in question, we enumerate chloro- or nitroparaphenylenediamine, 4-amino-1-dimethylaminobenzene, 4-amino-1-hydroxybenzene, 2-nitro-4-amino-1-hydroxybenzene, 4-chloro-2-amino-1-hydroxybenzene, 4.4'-diaminodiphenylamine, 4-dimethylaminodiphenylamine and similar compounds well known in the art.

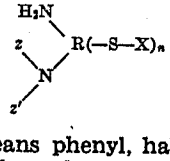
What we claim is:—

1. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



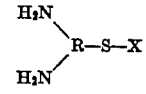
in which R means phenyl, halogenophenyl, hydroxyphenyl, alkoxyphenyl or alkylphenyl, and X means alkyl or hydroxyalkyl, z and z' stand for hydrogen, alkyl or hydroxyalkyl and n for 1 or 2.

2. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



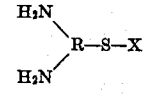
in which R means phenyl, halogenophenyl, hydroxyphenyl, alkoxyphenyl or alkylphenyl, and X means alkyl or hydroxyalkyl, z and z' stand for hydrogen, alkyl or hydroxyalkyl and n for 1 or 2, and a further dye for pelts of the group consisting of paradiamines and parahydroxyamino compounds of the benzene series.

3. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



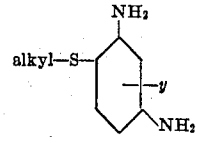
in which R means phenyl, halogenophenyl, hydroxyphenyl, alkoxyphenyl or alkylphenyl and X means alkyl or hydroxyalkyl.

4. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



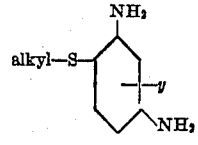
in which R means phenyl, halogenophenyl, hydroxyphenyl, alkoxyphenyl or alkylphenyl and X means alkyl or hydroxyalkyl, and a further dye for pelts of the group consisting of paradiamines and parahydroxyamino compounds of the benzene series.

5. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



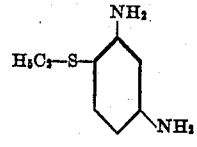
in which y means hydrogen, halogen, alkoxy, alkyl or alkoxy and a further dye for pelts of the group consisting of paradiamines and parahydroxyamino compounds of the benzene series.

6. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and a diamine of the general formula



in which y means hydrogen, halogen, alkoxy, alkyl or alkoxy and paraphenylenediamine.

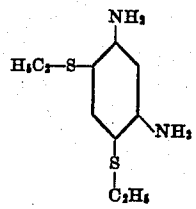
7. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and the diamine of the formula



and paraphenylenediamine.

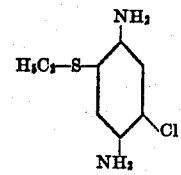
8. The process for dyeing furs, hairs or feathers which comprises treating the said material

in a dyeing bath containing hydrogen superoxide and the diamine of the formula



and paraphenylenediamine.

9. The process for dyeing furs, hairs or feathers which comprises treating the said material in a dyeing bath containing hydrogen superoxide and the diamine of the formula



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