sioner of Patents be taken to the Circuit Court of the District of Columbia, instead of to the individual judges? Why should not each judge for the duties thus imposed be allowed an annual compensation of, say $500, and when a patent cause should be heard, why not require the Circuit Court to sit in the Patent Office, ina room to be provided for that purpose? I confess I can see no objection to an amendment of this nature and respectfully recommend that such a law be enacted. It would obviate all the defects above explained, and, it is confidently believed, would meet with the approbation of the judges.

Previous to the month of December, 1857, it was the practice of the Commissioner to hear appeals in person from the adverse action of the examiners; but it was soon found, from the natural increase of the business of the Office, that this was becoming a physical impossibility; and hence was adopted the alternative of deputing temporary Boards of Examiners, which, in some measure, relieved the Commissioner of the burden thrown upon him. But the plan soon developed its own imperfections. Each Board had its own principle of action, and, in many instances, this differed from the rules prescribed by the Commissioner. As a corrective, it was at length determined by Commissioner Holt to establish a permanent Board of Appeal within the Office, whose members, three in number, should be taken from the Examining Corps, and whose duty it should be, to examine all *ex parte* rejected cases, and submit their report and recommendation, as to their final disposal, to the Commissioner for his approval. This Board has now been in existence for over three years, and the wisdom of its creation is a matter placed beyond all doubt. Guided in its principles of action by the doctrines established by the Courts, and illustrated by such eminent Commissioners as Mason, Holt, Bishop, and Thomas, whose confidence it has always enjoyed, "the result of its action," as stated by Mr. Holt in his report for 1858, continues to be "eminently satisfactory," and "to command, it is believed, the entire confidence of the country."

Since its establishment, the Board of Appeals has revised 1,790 cases, 748 of which it has reported for final rejection, while 271 have received its partial action. Of those rejected, only 42 have been carried up on appeal to the Judges of the Circuit Court of the District. It is confidently believed that no other tribunal of a like nature can exhibit such evidence of public approbation.

Prior to the 1st July, 1860, interferences were declared, examined, and the result reported to the Commissioner, by the separate Examiners to whose class they belonged. While the business of the Office was comparatively light, and the number of Examiners few, there was not much objection to this course; but as the number of applications and examiners increased —the former, however, in a greatly augmented ratio to the latter—it was found to be impossible for the Examiners to attend to their current duties in an intelligent manner when they were subject continually to be called off, to devote, in many instances, a week at a time, to the hearing and determination of questions arising between contesting applicants. But this, perhaps, was not the greatest evil. The Examiners had increased in the course of a few years from two in number to twelve; and as each Examiner disposed of his own interferences, there were as many different sets of rules and principles established as there were differently constituted minds. The want of harmony, the confusion, in short, resulting from such a state of things, was a source of great complaint, and involved the Office practice in a mist so impenetrable that the most acute became discouraged in their search for a clear and well-defined guide to the path they sought. A remedy seemed to be imperative; and as the only resource within his power, Commissioner Thomas deputed one of the most practiced and competent Examiners to discharge this duty, whose action, characterized by great industry and ability, it is believed, has given eminent satisfaction.

I would suggest that Congress make the designation permanent with reference to this particular service, giving the sanction of positive enactment to a rule eminently successful, if not imperatively required, in the future conduct of the business of the Office.

S. T. SHUGERT,
Acting Commissioner of Patents.

HON. JOHN C. BRECKINRIDGE,
Vice President of the United States.

ANILINE DYES.

Those beautiful aniline colors on silk and velvet, varying in tone from a crimson to a delicate lilac, and which have been known by the flash names of solferino, magenta, mauve, roseine, violine, purpurine, &c., are the products of an alcohol solution of an organic alkali combined with mineral oxyds. This alkali is aniline, a peculiar substance principally derived from coal tar, but it can also be manufactured from indigo. The production of these colors involves some of the most subtle and intricate processes known in chemistry; a more simple and connected explanation of some of them than has yet been given to the public will therefore be of very general interest.

Organicsubstances are exceedingly puzzling to chemists, on account of the great variety of products obtained from one general substance, such as bituminous coal. When this is distilled in a retort, one of its products is tar, from which, by distillation and rectification, the following are derived, the first three columns being liquids :—

NEUTRAL.	ACIDS.	BASES.
Water.	Rosolic.	Ammonia.
Benzole.	Brunolic.	Methylarnine.
Toluol.	Phenic.	Ethalymine.
Cumole.	Acetic.	Aniline.
Cymole.	Butyric.	Quinoline.
Propyle.		Picoline.
Butyle.		Toluidine.
Amyle.		Cumidine.
Caproyle.		Phyrrhol.
Hexyline.		Pætinine.
Heptyline.		
Oil of tar		

GASEOUS PRODUCTS.	SOLID PRODUCTS.
Hydrogen.	Carbon.
Carbureted Hydrogen.	Naphthaline.
Bicarbureted Hydrogen.	Paranaphthaline, or Anthraceine.
Various Hydro-carbides.	Paraffine.
Carbonic Oxyd.	Chrysene.
Sulphide of Carbon.	Pyrene.
Carbonic Acid.	
Hydro-sulphuric Acid.	
Hydro-cyanic Acid.	

Here are no less than forty-two different products obtained from coal. Some of these have truly jaw-breaking names, and some of them emit the most horrible stench; while others, such as benzole, afford a very pleasant odor. Different coals yield varying quantities of these products in their tar: some contain little benzole and considerable naphthaline, while others contain a preponderating quantity of benzole and phenic acid.

Aniline can be obtained by treating the tar of coal with acids and alkalies, and then distilling it with milk of lime; but the most simple method to obtain it is to operate with benzole, because it is now a common article of commerce. Benzole is a peculiar hydrocarbon fluid, which is employed in some instances for illumination, and for cleansing soiled silk and light colored kid gloves. It dissolves gutta-percha, has an agreeable odor, and, when inhaled, produces intoxication. To make aniline from benzole, the latter is treated with aquafortis, as follows :—

A certain quantity of nitric acid is placed in a capacious glass vessel surrounded by cold water, and about an equal quantity of cold water is added to it, until two layers of the liquid begin to appear. The glass vessel is then removed from the cold water, and slightly heated, until the two layers of liquid have united; the whole is now thrown into six times its bulk of cold water, when a heavy yellow oil sinks to the bottom. This is nitro-benzole, which is afterward repeatedly washed with water for use. It possesses an agreeable odor, and may be used as a perfume. By saturating a solution of nitro-benzole and alcohol with ammonia, then passing a current of sulphureted hydrogen gas through it, a deposit of sulphur falls to the bottom, and aniline is the other product. Another method of obtaining it is by treating nitro-benzole with nascent hydrogen. Being an alkali, aniline combines with acids, forming salts, and also with various oxyds, forming quite a variety of compounds.

A great number of patents have been taken out in England and France for dyeing aniline colors. The first on the list is that of Mr. W. H. Perkins, of London, which was obtained in August, 1856, and was for the celebrated *mauve*—a deep violet. He took a cold solution of the sulphate of aniline (aniline combined with sulphuric acid), and a similar solution of the bichromate of potash, and mixed them thoroughly together; then allowed it to rest for twelve hours. A black deposit fell to the bottom of the vessel; this was washed with water, then dried, and afterward digested with benzole, which dissolved out all the tarry matter contained in it. It is thus described in Perkin's patent, which shows that he used very impure aniline, because if he had commenced to obtain it with pure benzole, it would not have been combined with tarry matter. The chromate of aniline thus made is a rich claret color, but is insoluble in water. To renderit fit for dyeing silks, &c., it is dissolved in alcohol or wood spirit; and in this condition, it is now sold to dyers.

The French method of treating aniline to obtain a red color (solferino), is the invention of M. Verguin, a chemist of Lyons, who sold his discovery to M. Renard Freres, who took out a patent in 1859, and gave the color the name of "Fuchsiacine." It is made by mixing ten parts (by weight) of aniline with six of anhydrous chloride of tin, then boiling them for fifteen minutes. The mixture first becomes yellow—then assumes a beautiful red. Considerable water is now added to the solution; then it is boiled for a little while longer, and filtered while hot. The filtered liquor contains the coloring matter in solution. When common salt is added to this solution, the color is deposited; and it may then be separated by decantation, dried, and sold in powder. In this condition it is insoluble in water, and requires to be dissolved in alcohol for common use in silk dyeing. It is sold in both conditions, but most commonly as an acoholic liquor.

A red color can be obtained with aniline and several anhydrous chlorides—such as bichloride of mercury, perchloride of copper and perchloride of iron; also, the hydrate of bichloride of tin, bibromide of tin, iodide of tin, and a host of other "ides" and "ates." By the employment of acid and alkalies as alteratives to produce reactions in the dyeing liquors, almost any shade or color can be produced with aniline solutions, from a crimson to a deep lavender approaching a blue. We have examined ten English patents granted for making aniline colors, and find that most of them have a very close relationship to the first that were issued to Perkins and Renard Freres.

The colors derived from aniline are exceedingly brilliant in hue, and they withstand washing very well; but after having been thoroughly tested, they have failed in one particular feature demanded of all colors exposed to light, viz., they fade when exposed to the beams of the sun. This is one essential point to which the attention of color chemists should be directed in order to discover some oxyds which, when combined with aniline, will not be changed by solar light.

The colors hitherto manufactured from aniline have been chiefly of one class—crimson and purple. But why may not other colors—such as green, blue, brown, &c.—be also obtained from aniline? And cannot the analogues of aniline in the above table be also employed in the manufacture of new coloring compounds? A beginning has just been made by the distinguished English chemist, F. C. Calvert, in this line. He has recently, conjointly with two associates, taken out a patent for an aniline green color, called "emeraldine," which is said to be exceedingly beautiful. We have no doubt but brilliant coloring matters may be obtained from the bases cumidine, toluidine, &c., &c., as well as aniline.

We have given a simple and brief description of the peculiar products of bituminous coal, and how aniline and its beautiful colors are manufactured. These substances are very high in price at present, which affords us good grounds for concluding that there is plenty of room for improvement in the processes now employed to obtain them. The coal fields of America embrace an area of 180,000 square miles; they contain inexhaustible stores of these coloring materials, and there is nothing in the whole range of chemical science opposed to the reasonableness of the conclusion that every color known in the arts may yet be manufactured from the products of coal—yes, and from the very refuse of our gas and coal oil manufactories.

CONDITION OF THE PATENT BILL.—At the time of our going to press, the Senate and House had voted to disagree to sundry amendments made by each, to the Patent bill, and a conference had been agreed upon between the two branches, so that it is probable some compromise may be agreed upon, and thus the bill may be saved. It will afford us much pleasure, if, in our next issue, we can congratulate our readers upon amendments of the patent laws, such as we have been contending for for years past.

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