ADAM SCHAEFER'S COMPOUND FOR IMPROVING THE
QUALITY OF STEEL.

BY S. LLOYD WIEGAND.

[*Abstract of a Communication, presented at the Stated Meeting of the INSTITUTE, held Wednesday, October 20, 1886.*]

This compound is the subject of letters-patent of the United States, numbered 341,173, and dated May 4, 1886. It consists of rosin, linseed-oil, glycerine and powdered charcoal, heated and intimately mixed in the proportions stated in the specification.

It is used by heating the steel to a clear red heat, and immersing and coating it in the compound, and the steel is afterwards re-heated and hardened in the usual manner by quickly cooling it.

Burned cast-steel is restored to its original condition, and the softer grades of steel acquire the properties of cast-steel by being treated as above stated. Tools made from Bessemer steel, which is incapable of being hardened, are, after treatment with this compound and hardening, capable of cutting cast-steel.

Tools so treated possess a greater durability than before, and are capable of cutting castings, which resist the best of ordinary cast-steel tools.

The grain of steel exhibited by fracture of tools so treated as compared with the same material before treatment shows a difference analogous to that between fine cast-steel and coarse or blistered steel.

The compound applied to gray castings and malleable iron-castings imparts a degree of hardness to them superior to ordinary case-hardening.

It is not attended in use with the unpleasant and deleterious fumes incident to case-hardening compounds, containing hydrocyanic acid, and is much less expensive.

Specimens of different materials in their normal state and also as treated with this compound and hardened were submitted, properly labelled, which conveyed a clearer conception of the effect than could be stated in language.

In order that the facility of application and its effect may be seen, a forge with fuel and bars of steel and other metal and a supply of the compound were submitted, by means of which

the members who felt inclined, personally tested it after the close of the meeting.

The compound has been introduced into practical use in many manufacturing establishments in this city with uniformly satisfactory results.

THE CONSTITUENTS OF COAL-TAR.*

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The following table gives the names and formulæ of the numerous bodies, the pressure of which in coal-tar may be considered to be fairly well established, while other more volatile products of the distillation pass wholly into the gas. The presence in coal-tar of certain other compounds, which do not appear in the table, is strongly suspected; while of the constituents of the large fraction of coal-tar distilling between 240° and 270° C., and of the anthracene oils, much still remains to be learned. Of the composition of the residue or pitch still less is known.

The figures appended to the names of the constituents are their boiling points on the Centigrade scale. In the case of most of the compounds of very high boiling point, the melting points are also added.

The general composition of the various fractions obtained by the distillation of coal-tar will be regulated chiefly by the boiling points of their leading constituents, but the vapor-densities, vapor-tensions and relative abundance of the constituents of the tar also largely affect their behavior in the still. Thus, naphthalene is found in notable quantity in all the fractions from second light oils to anthracene oil, and is even deposited from the purified illuminating gas itself.

A MUSHROOM DEVELOPED IN HUMAN SALIVA.—M. Galippe, having filtered saliva by means of Pasteur's apparatus, the filtered saliva remaining undisturbed, saw appear at the lower end of the filter, not in contact with the saliva, a mushroom made up of tubes of mycelium and of spores. By the advice of Prof. Max Cornu, M. Galippe has cultivated this mushroom in Van Tieghem cells and has been able to prove that it was neither an aspergillus, nor a penicillium. This fungus, which has neither been described, nor drawn heretofore, belongs to the monilia family. M. Galippe proposes to give it the name of *Monilia sputicola*.—*Comptes Rendus*, May 24, 1886.

* From an advance-sheet of the new edition of the author's work on *Commercial Organic Analysis*. Vol. II.