SCIENCE AT THE BRITISH ASSOCIATION.

THE IDEAL CRIMINAL.

Mr. Francis Galton discussed the ideal criminal, in whom he detects three peculiarities of character: his conscience is almost deficient, his instincts are vicious, and his power of self control is very weak. By the examination of many thousand photographs of criminals, he was enabled, by their physiognomic characteristics, to divide them into three well-marked groups, respectively, of perpetrators of murder, manslaughter, and burglaries, perpetrators of felonies and forgeries, and perpetrators of sexual crimes; and in this way he was enabled to examine how far the peculiarities first mentioned above may be correlated with physical features. The history of the famous Jukes family of criminals was brought forward, to show what extremely important topics may be open to inquiry in a single branch of anthropological research; and the general argument pointed to the necessity of more accurately obtaining explanations of the conditions under which the quality of the stock of the human race deteriorates or improves.

RAILWAY BRAKES.

Mr. E. Woods, C.E., discussed railway brakes, and reviewed the Midland Railway experiments of 1874. His investigations pointed to the following considerations as necessary in view of the provision of perfect brake power for heavy fast trains: 1. The brake power should be applied to all the wheels of the vehicles throughout the trains. 2. The power by which the blocks are forced upon the wheels should be adequate to skidding the wheels upon the speed becoming moderately reduced. 3. The driver should have the whole of the brake power of the train completely under his command, and be able to apply it at a moment's notice, as he is the first person likely to discover any obstruction ahead, and is primarily responsible for the regard of danger signals. He can thus stop the train at once, and no time is lost by his having to signal danger to the guard. 4. The guards should individually possess the like means of applying the continuous brake, that they may be enabled to stop the train without reference to the driver, in an emergency which may have manifested itself to the guard, but of which the driver is unaware—such, for instance, as a broken axle or a carriage getting off the line. 5. The power in hand should be susceptible of easy modulation, that the driver may be able to apply a moderate amount only for effecting ordinary stops, while he keeps in reserve a proper excess of power to be used only in emergencies, as in the contingency of stopping rails. 6. Full brake application should not require more than a very moderate effort on the part of driver or guard. 7. The pressure should be steady and distributed as equally as possible over all the wheels, and acting upon them with the intervention of some elastic medium to prevent too sudden and violent action to occasion the snapping of chains and to inconvenience the passengers. 8. The machinery should be of simple construction, not likely soon to get out of order, and admitting of being easily repaired. 9. Indication should be constantly afforded to driver and guard that the brakes are in proper condition to work or otherwise. 10. A power of working the tender brake and the van brakes by hand, as well as by power, may be advantageously retained. 11. The brakes to be self-acting in case of the severance of the train, and, when severed, the guards to have control over the several portions. 12. Automatic action being provided, means should be furnished to the brake attendants for modifying the action instantaneously, according to the circumstances in which the train may be placed after an accident has occurred. 13. It would be dangerous, and, therefore, inadvisable, to give to passengers any power over the brakes.

AFRICAN EXPLORATION.

Commander Cameron, R. N., the well known African explorer, proposed exploring the continent of Africa through the establishment of trading societies similar to the East Indian and Hudson's Bay Companies; and advocated a system of central stations placed at intervals of from 200 to 250 miles distant. These stations might be turned to account as meteorological observatories, and as depots for botanical and zoölogical collections. He further pointed out that the productive regions of Eastern and Central Africa were capable of bringing forth corn in sufficient abundance to feed the starving millions of overcrowded India.

CHECKING POPULATION.

Dr. Farr said that, according to the most recent calculations, the population of the whole world was now 1,424,000,000. Within certain limits the reduction of mortality has no absolute tendency to accelerate the natural increase of population. Where the death rate reached a much higher pitch, the birth rate no longer kept pace with it; but the diminution of the mortality of England by sanitary improvement was in no danger of multiplying by multiplying men beyond the means of subsistence. Experience proved the contrary, and therefore to keep a population stationary, or to retard national growth, there was needed neither war pestilence nor famine pestilence, nor a war between man and man, but between the lowest forms of life and human life.

MANGANESE MINES IN ITALY.—It may be interesting to the mineral world, and especially to consumers of manganese, that some exceedingly valuable mines have been recently opened in the Val d'Aosta, situated on the sunny side of the Alps. One mine alone, that of St. Marcel, in the lovely Val d'Aosta, is considered capable of producing 50,000 tons a year, and that of Val Tournanche is a clear competitor in the question of richness and capability.

Patent Medicines and Secret Remedies.

The subject of patent and proprietary medicines is an interesting one, and its discussion involves some delicate questions of honesty and ethics. It is one of the most stringent rules of the regular medical profession not to copyright, patent, or keep as a secret any remedy discovered by one of its members. Physicians are supposed to devote their time and strength to the alleviation of suffering among the human family; new discoveries are at once published for the benefit of the race. A man who puts forth any preparation, whose composition he keeps secret, and attempts to profit by the sufferings of others, is denounced by the profession as a *quack*, and a physician will seldom if ever prescribe such remedies, even if they possess merit, which, no doubt, they sometimes do. A credulous community eagerly purchases these widely advertised medicines; and as the profits on them are enormous, they are generally recommended by the druggists, and, as we all know, their sale is immense, as shown by the success of Brandreth, Ayers, Helmbold, and others. In many cases the composition is known by the profession, and hence sometimes they advise their use, but usually the profits charged by the manufacturers render it preferable to administer their contents in another form. In other cases, the manufacturing pharmacists are able to combine several substances to form a neater preparation than can be made by the retail apothecary.

The German chemists are very unmerciful to those who would impose upon the public by worthless preparations; and one Berlin journal, the *Industrie Blätter*, edited by Dr. E. Jacobsen, offers to analyze *gratis* any patent medicine sent to them in the original package. The analyses of over *eleven hundred* such preparations, made by Dr. Hager, Wittstein, Rose, Chandler, Reveil, and others, have been collected together by E. Hahn and published in book-form by J. Springer. A few of these analyses we propose to lay before our readers for their information and amusement, remarking, however, that in some cases it is impossible for the analyst to exactly determine some of the organic remedies, such as gums, balsam, and resins, when in combination or solution, and noting the difficulty of accurate translation of pharmaceutical terms:

Dr. Pierce's Golden Medical Discovery. A one dollar bottle holds 220 grains of a brownish colored clear liquid, consisting of 15 grains pure honey, 1 grain extract of poisonous or acrid lettuce (bot. *herba lactucæ virosæ*), 2 grains laudanum, 100 grains dilute alcohol (64 per cent), tasting like fusel oil and wood spirit, with 105 grains of water.

Dr. Livingston's Ant Balsam, a German remedy, consists of 72 grains castor oil, 2 grains balsam of Peru, and 5 drops oil of bergamot.

American Tooth-ache Drops, made by Majewsky in Warsaw, have different compositions. Those which took the prize at Vienna consisted of common salt and brandy, colored with harmless cochineal red (price, 37½ cts.).

Asthma Pastils (Danl. White & Co., New York), according to the analysis of Dr. Fleck, contain 20·1 per cent salt peter, 3·5 per cent impure scammonium resin, 35·0 per cent gum and sugar, 40 per cent charcoal powder, leaves and stems of some plant.

Ayer's Pills consists of pepper, colocynth, gamboge (*gutti*), and aloes.

Ayer's Hair Vigor, a solution of 0·6 per cent sugar of lead.

Horsford's Baking Powder. One powder contains acid phosphate of lime and magnesia mixed with a certain quantity of flour; the other is bicarbonate of soda.

Berlin Balsam, for cure of all kinds of sores, burns, cuts, wounds, ulcers, chilblains, etc., is nothing but common glycerine contaminated with a considerable amount of chloride of calcium.

Cook's Balsam of Life is a filtered decoction of 20 parts borax in 250 parts water, and 1½ parts pulverized camphor in 1 liter of liquid. Used externally for toothache and all skin diseases.

Brandreth's Pills, says Dr. Hayer, consist of gamboge (*gummi-resina gutta*), podophyllin, inspissated juice of phytolacca, saffron adulterated with yellow root, pulverized cloves and oil of peppermint. The editor states in a foot note that, according to the assertion of two American druggists and one merchant, gamboge is present in Brandreth's Pills, but that the action of the pills does not correspond to this constituent, in which latter assertion we think the editor is slightly mistaken, the pill being really cathartic.

Buckingham's Dye for the Whiskers consists, according to Dr. Schacht, of an ammoniacal solution of lunar caustic, containing 0.5 grammes nitrate of silver, 2·5 grammes aqua ammonia, in 40 grammes of distilled water.

Butter powders seem to be a favorite article of manufacture abroad, and are supposed to aid in making good butter quickly at any season of the year. They consist of bicarbonate of soda (baking soda), colored with turmeric or other less harmless pigment.

Dr. Brown's Chlorodyne contains 5 parts of concentrated muriatic acid, and 10 parts each of ether, chloroform, tincture of cannabis indica (Indian hemp), and tincture of capsicum, 2 parts each of morphine and hydrocyanic acid, 1 part oil of peppermint, 50 parts simple syrup, 3 parts each of tincture of hyoscyamus and tincture of aconite.

Taylor's Concentrated Castor Oil in Gelatin Capsules. They contain real castor oil mixed with 0·5 per cent of croton oil.

Cosmolin and Vaselin are variable mixtures of paraffin with volatile oils. It is the residue left from the distillation of petroleum purified by filtration over animal charcoal, says Miller.

Tobias' Condition Powders contain, says Schädler, 2 grammes tartar emetic, 20 grammes black sulphide of antimony, 10 grammes sulphur, 10 grammes saltpeter, 40 grammes fœnum græcum, and 20 grammes juniper berries.

Eau de la Floride contains, according to Eymael, 50 parts sugar of lead, 20 parts sulphur, and 1,000 parts distilled water.

Eau de Quinine, a favorite hair wash that is much used in Berlin and Leipzig, contains 2 grammes balsam of Peru, 6 grammes castor oil, 60 grammes rum, 35 grammes water, 5 grammes tincture of red chinchona. Its constituents are at least harmless, which can be said of but few of our American preparations for the hair.

English Patent Washing Crystals; 6 parts water glass, 29 parts calcined soda ash, 60 parts bicarbonate of soda, 5 parts water.

Buehligen's Depilatory. A mixture of 2 or 3 parts sulphide of arsenic with 15 parts pulverized quicklime.

Bucher's Fire Extinguishing Powder contains 59 parts saltpeter, 36 of sulphur, 4 of charcoal, 1 of oxide of iron. We fail to see the advantage of this peculiar sort of impure gunpowder as a fire extinguisher.

Non-poisonous (?) Fly Paper, from Bergmann & Co., in Rochlitz, contains a large amount of arsenic!

Iodine Cigars, from J. D. Tormin, in Stettin, bear the motto "No more phthisic;" but contain no trace of iodine. Can the Yankees beat that?

Hamburger Tea contains 32 parts of senna leaves, 16 of manna, 8 of coriander, and 1 of tartaric acid, ground up together.

Dr. Sage's Catarrh Remedy, says Schädler, contains 0·5 grammes of carbolic acid, 0·5 grammes camphor, and 10 grammes common salt, which are to be dissolved in ¼ liter of water, and injected into the nostrils. It appears very probable that the wide reputation of this remedy is a deserved one, and the publication of its constituents will rather increase than retard its sale.

Croup Powder, from F. W. Gruse, in Berlin, contains 25 parts of common salt, 10 of flowers of sulphur, 25 of fœnum græcum, 25 of juniper berries, 5 of gentian root, and 5 of fennel seed.

Horn's Liton, infallible cure for tooth-ache, contains 5 parts of phosphate of lithia dissolved in 400 parts of alcohol.

Schenk's Mandrake Pills. Hager says that these pills contain no mandrake. They do contain the constituents of cayenne pepper, a bitter extract, and some vegetable powder containing tannin.

Bishop's Granular Effervescent Citrate of Magnesia. According to Löhlein, it contains neither citric acid nor magnesia, but is merely a mixture of bicarbonate of soda and tartaric acid.

Poho, a Chinese essence for headache, etc., consists, according to Hager, of good and pure peppermint oil, rather hard and resinous. According to others it is a mixture of Epsom salts and peppermint oil, or of the latter with oil of almonds.

R. R. R. consists of a reddish-yellow liquid, that smells of ammonia and camphor. It contains 14 parts soap, 40 parts of 10 per cent ammonia, 640 parts alcoholic extract of cayenne or Spanish pepper, 4 parts camphor, and 2 parts rosmarin oil.

Selenite Perfectionné, from Paris, for dyeing the hair, is an alkaline solution of acetate and nitrate of lead.

Mrs. Winslow's Soothing Syrup consists, says Hager, of 8 parts of white simple syrup mixed with 1 part of a tincture made by extracting 10 parts of freshly crushed fennel seed and part of oil of fennel with 60 per cent of spirits.

Sozodont for the Teeth. The reddish liquid consists of a solution of 5 grammes oil soap in 6 grammes glycerin, 30 grammes spirits, 20 grammes of water, perfumed with a few drops of oil of peppermint, oil of cloves, oil of cinnamon, and oil of anise, and colored with cochineal. The powder is a mixture of carbonate of lime, magnesia, and Florentine orris root. None of the ingredients can be considered objectionable.

Worm Lozenges. A favorite American remedy. It contains 1 part calomel, 6 parts santonine, and 290 parts sugar.

World's Hair Restorer contains, says Wittstein, 5·6 grains sulphur, 8 grammes sugar of lead, 100 grammes glycerin, and 200 grammes aromatic perfumed water.

Extract of Walnut Shells. A preparation with this harmless appellation is put up by a Berlin firm; but it contains, according to Schädler, a little nitrate of silver and chromate of copper in ammoniacal water.

The above are but a few specimens, selected to show that humbugs are pretty equally distributed over the earth's surface, including China, while at the same time we are pleased to notice that some of our American preparations are totally harmless, while others are even useful and beneficial. We hope at the same time to have satisfied a pardonable curiosity in some of our readers.

POLISHING BRASS.—For polishing the brass work of engines, rub the surface of the metal with rottenstone and sweet oil, then rub off with a piece of cotton flannel and polish with soft leather. A solution of oxalic acid rubber over tarnished brass soon removes the tarnish, rendering the metal bright. The acid must be washed off with water, and the brass rubbed with whiting and soft leather. A mixture of muriatic acid and alum dissolved in water imparts a golden color to brass articles that are steeped in it for a few seconds.