A HAIRY FACED FAMILY.

Mr. W. B. Tegetmeier, a well known English naturalist, publishes in a contemporary the portraits of three members of a Burmese family, the whole of which, through several generations, have exhibited a remarkable development of long hair over their entire faces.

"The case," says Mr. Tegetmeier, "is one of the most interesting examples on record of the hereditary transmission of a singular and very abnormal natural variation through several generations. I feel bound, even at the risk of repeating, to some extent, the previous statements, to give, as far as practicable, the history of those singular people at length. Nearly fifty years since, Mr. John Crawford, so well known to ethnologists for his researches into the history of languages of the inhabitants of the Malay peninsula and adjacent countries, described, in his 'Journal of an Embassy from the Governor General of India to the court of Ava,' a hairy man named Shwe-Maon, and his daughter, Maphoon. Mr. Crawford wrote: "We have heard much of a person said to be covered all over with hair, and who, it was insisted upon, more resembled an ape than a human being—a description, however, I am glad to say, which was by no means realized by his appearance. Having expressed a curiosity to see this individual, the king politely sent him over to our dwelling some days ago, and Dr. Wallich and I took down on the spot the following account of himself and his history. His name was Shwe-Maon, and he stated himself to be thirty years of age. Saubwa, as the chief of the country, presented him to the king as a curiosity when a child of five years of age, and he had remained in Ava ever since. His hight was 5 feet 3½ inches, which is about the ordinary stature of the Burmese. His form was slender, if compared with the usually robust make of the Hindoo-Chinese race, and his constitution was rather delicate. In his complexion there was nothing remarkable, although upon the whole he was rather fairer than the ordinary run of Burmese. The color of his eyes was a dark brown, not so intense as that of the ordinary Burmese. The same thing may be said of the hair of the head, which was also a little finer in texture and less copious. The whole forehead, the cheeks, the eyelids, the nose, including a portion of the inside, the chin—in short, the whole face, with the exception of the red portion of the lips—were covered with a fine hair. On the forehead and cheeks this was 8 inches long, and on the nose and chin about 4 inches. In color it was of a silvery gray; its texture was silky, lank, and straight. The posterior and inferior surface of the ears, with the inside of the external ear, were completely covered with hair of the same description as that on the face, and about 8 inches long; it was this chiefly which contributed to give his whole appearance, at first sight, an unnatural and almost inhuman aspect. He may be strictly said to have neither eyelashes, eyebrows, nor beard, or at least they were supplanted by the same silky hair which enveloped the whole face. He stated that when a child the whole of this singular covering was much fairer than at present. The whole body, with the exception of the hands and feet, was covered with hair of the same texture and color as that now described, but generally less abundant; it was most plentiful over the spine and shoulders, where it was 5 inches long; over the breast it was about 4 inches; it was most scanty on the bare arms, the legs, thighs, and abdomen. We thought it not improbable that this singular integument might be periodically or occasionally shed, and inquired, but there was no ground for this surmise—it was quite permanent.'

Twenty years since, these hairy people were seen and described by Capt. H. Youle, in his 'Narrative of the Mission sent by the Governor General of India to the Court of Ava.' By this time Shwe-Maon's child had grown into a woman of thirty, and the abnormal growth of hair had increased until it covered the whole body. Capt. Youle states:

'The whole of her face was more or less covered with hair. On a part of the cheek, and between the nose and mouth, this was confined to a short down, but over all the rest of the face was a thick, silky hair of a brown color, paleing about the nose and chin, four or five inches long. At the alæ of the nose, under the eye, and on the cheek bone, this was very fully developed; but it was in and on the ear that it was most extraordinary. Except the upper tip, no part of the ear was visible. All the rest was filled and veiled with a large mass of silky hair, growing apparently out of every part of the external organ, and hanging a pendant lock to a length of eight or ten inches. The hair over her forehead was brushed so as to blend with the hair of the head, the latter being dressed (as usual with her countrywomen) *à la Chinoise*. It was not so thick as to conceal her forehead.

'The nose densely covered with hair, as no animal's is that I know of, and with long locks curving out and pendant, like the wisps of a fine Skye terrier's coat, had a most strange appearance. The beard was pale in color, and about four inches in length, seemingly very soft and silky.

'Poor Maphoon's manners were good and modest, her voice soft and feminine, and her expression mild and not unpleasing, after the first instinctive repulsion was overcome. Her appearance rather suggested the idea of a pleasant-looking woman masquerading, than that of anything brutal. This discrimination was, however, very difficult to preserve in sketching her likeness.

'Her neck, bosom, and arms appeared to be covered with a fine pale down, scarcely visible in some lights. She made a move as if to take off her upper clothing, but reluctantly, and we prevented it. Her husband and two boys accompanied her. The elder boy, about four or five years old, had nothing abnormal about him. The youngest, who was fourteen months old, and still at the breast, was evidently taking after his mother. There was little hair on the head, but the child's ear was full of long silky floss, and it could boast a moustache and beard of pale silky down that would have cheered the heart of many a cornet. In fact, the appearance of the child agrees almost exactly with what Mr. Crawford says of Maphoon herself as an infant.

'This child is thus the third in descent exhibiting this strange peculiarity; and in this third generation, as in the two preceding, this peculiarity has appeared only in one individual.

'Maphoon has the same dental peculiarity also that her father had—the absence of the canine teeth and grinders, the back part of the gums presenting merely a hard ridge. Still she chews pawn like her neighbors.'

Six or seven years since, the family were again seen by Capt. Haughton, and photographed. By this time Maphoon's youngest child was approaching manhood, and, the early indications above alluded to having been fulfilled, he demonstrated the perpetuation of this singular variation through three generations.

The investigation of monstrosities of the kind at present under consideration has an interest beyond that of the gratification of mere vulgar curiosity. The hereditary transmission of accidental variations throws much light on the vexed question of the origin of species, and it is exceedingly interesting to note how readily variations, occurring naturally, are perpetuated in the offspring, while malformations or mutilations produced artificially never show any tendency to reproduction. The combs and wattles of game fowls have been cut off for 150 generations, yet a game cock ready dubbed for the cockpit never issued from an egg. It would be indeed a sad condition of things if the mutilations of mankind were inherited by the unfortunate children. We know, unhappily, that the constitutional defects of the drunkard and the debauchee descend to their offspring, and that in this manner 'the sins of the fathers are visited on the children even unto the third and fourth generations;' but, fortunately, we are exempted from the inheritance of accidental mutilations and losses."

THE HAIRY FACED BURMESE FAMILY.

Removing Snow by Steam.

Mr. William Edwards lately presented a paper on this subject before the New York Society of Practical Engineering, in which he gave a review of the various plans for melting snow in the streets to insure its removal.

The system begun in the use of a steam hose, furnished with a nozzle and fitted to a stationary boiler, the hose being extended to the sidewalk, and the steam jet, properly guided, rapidly melting the snow and ice, and heating the resulting water so that it quickly evaporated, leaving the flagstones dry.

One of the earlier projects was to lay steam pipes along the gutters so that snow, brushed upon the pipes by a street sweeping machine would be melted and run off to the sewers.

Another step forward, at least theoretically, is the plan of a perambulating apparatus, constructed to act upon the snow by jets of steam, by blasts of hot air, or contact with metal plates. It is calculated that the combustion of one pound of coal would, theoretically, melt about 100 pounds of snow; in practice, perhaps three fourths of that quantity.

Within the past two years renewed attention has been given to the subject, and numerous novel inventions made. In one of these a hollow case is provided with a furnace, through which an air blast is forced by a blower. The hot air and gases from the furnace pass through a narrow horizontal opening at the front of the machine, and are directed forcibly downward against the snow and ice.

In another a portable engine operates a revolving shovel, made with a steam space, so that, when the snow is lifted by the shovel, it is melted therein.

In another a horizontal tank, supplied with steam from a boiler on wheels, is perforated at its under side, so that a shower of steam jets is thrown down upon the snow.

In still another a revolving brush sweeps the snow into a double walled hopper; steam is conducted between the walls of the hopper and melts the snow.

In another the perforated steam tank is replaced by a perforated hot air tank and blowing devices that shower down streams of hot air instead of steam.

In another hot water, or steam and hot water together, are thrown upon the snow-covered surface, and in still another the steam is superheated before use.

In still another, movable plates are heated in a furnace and lowered in contact with the pavement.

These examples give some idea of the amount of ingenuity lavished upon the subject, but nothing yet done seems to afford an adequate solution of the problem of how to cheaply and quickly remove snow from the streets. The mere cost of coal for melting would probably not prove an insuperable obstacle, but the freezing of water resulting from the operation would be a greater evil than that sought to be remedied. The writer believed that melting the snow would be more economical than carting it away; but in order to do this, the snow must be swept from the street ways, either to the traveling machine or to fixed pipes, previous to melting; and the water must be conducted direct to the sewers to prevent the formation of ice in the streets. He knew of no means by which this could be accomplished, but expressed the opinion that improvements yet to be made will, in the future, make snow melting the most satisfactory method of cleaning city streets in winter.

Combustion.

At a recent meeting of the Edinburgh and Leith Engineers' Society, a paper on "Combustion" was read by Mr. Wm. Allan Carter, C. E. He remarked that an ordinary sample of anthracite coal is found to contain the following constituents in something like the following proportions:—Carbon, 86·32 per cent; oxygen, 7·21 per cent; hydrogen, 3·75 per cent; nitrogen, 0·41 per cent.; ash, 2·21 per cent; sulphur, 0·10 per cent. But in ordinary bituminous coal, such as from Edinburgh, Glasgow, Newcastle, Lancashire, or Durham, we find the carbon ranging from 74 to 88 per cent, and the hydrogen from 5 to 6 per cent; and in bituminous coal, the amount of hydrogen is an important feature, as it is from this gas that flame is produced during combustion.

We will suppose some time has elapsed since fresh fuel has been thrown on the fire, and we find that the fuel on the bars presents to our view a glowing, incandescent mass, with no appearance of smoke and no flame, and we will suppose that the only access for the air necessary for supporting combustion is through the fire bars from the ashpit, through the incandescent fuel and finally away to the chimney; and it need scarcely be said that the supposed case is one of very common occurrence.

The moment the air comes in contact with the incandescent fuel it is resolved into its constituents, nitrogen and oxygen, the nitrogen passes on to the chimney with no further change than increase of volume from increase of temperature; the oxygen, however, is arrested, and each atom of carbon seizes two atoms of it, and one atom or equivalent of carbonic acid is formed. If this carbonic acid got away to the chimney, nothing further could be desired, and complete combustion of the coke would be effected. But it is not destined to escape in this manner, for before the atom of carbonic acid has struggled through the mass of fuel and got free from it, it has taken up another atom of carbon, and now, instead of being carbonic acid, CO_2, it has been converted into C_2O_2, or two equivalents of carbonic oxide, and it is this gas which escapes to the chimney. Experiment has proved that carbonic acid is not combustible, but that carbonic oxide is, and it stands to reason, if anything of a combustible nature is escaping from the chimney, we cannot be having complete combustion in the furnace; but there are very few practical men who have any idea whatever as to the magnitude of the loss of heat when carbonic oxide is the result of combustion instead of carbonic acid; for we find from calorimetrical experiments that, in the former case, we only get three tenths of the evaporative power produced in the latter. Now in order to burn this carbonic oxide, we must supply each atom of carbon in it with another atom of oxygen while the carbon is at a sufficiently high temperature; if the combination is effected, then our carbonic oxide is reconverted into carbonic acid, and has given out during its reconversion the seven tenths of heat which we noted were deficient in the formation of the oxide.

The next point considered was the gaseous portion of the coal, and it was pointed out how fuel might be lost, either by the gas escaping wholly or by being only partially burned, the latter alternative causing the formation of smoke and soot. Mr. Carter showed how this latter alternative was generally attributable to the want of a proper supply of air admitted above the fire, or to the flame being brought into contact with the metal plates of the boiler, and so cooled down below the temperature necessary for ignition of the gas, and mentioned the following instance:

"Last winter I had a little stove in one of the rooms of my house; it is one of those commonly known as a gill stove; the whole of the air supporting the fire had to pass from beneath through the bars, and consequently through incandescent fuel, before reaching the flue. I was greatly disappointed with the performance of this little stove, as far as its heating power was concerned; eventually I took off the door and drilled a number of small holes in it so as to admit jets of air above the fire; the fire inside has been as bright and as lively again since this surgical operation, and the quantity of soot collecting in the flue, which before proved a constant nuisance, is now almost reduced to *nil*. This is an instance of how easily a remedy may sometimes be applied."

After going through various calculations to show the quantity of air required above and below the fire for certain quantities of coal, and how smoke and soot were formed, Mr. Carter concluded in the following terms:

"So long as popular errors prevail amongst that class of men who have the direct control of furnaces of all descriptions—I allude to the practical managers or foremen in manufacturing works—little will be done to prevent waste of fuel; and as a rule, when you begin to speak to them about carbonic acid and carbonic oxide, they look at you with an incredulous smile, you at once lose caste with them and fall from the high position of a practical man to the pitiable *status* of a mere theorist. But I maintain that this is not simply a matter of theory, but that the principles involved are of an eminently practical nature, and if applied in practice may be turned to good account. We must impress on the practical man that air is required in certain quantities and delivered in certain methods; we must combat the idea that gas is smoke, or that gas and smoke are synonymous terms. We must point out that volumes of black smoke do not constitute the only indication of waste of fuel, for, as I have shown, the waste may be enormous although no vestige of smoke is to be seen. We must challenge the idea that a furnace can consume its own smoke, that is simply impossible; we can construct a furnace to prevent the formation of smoke, but let smoke once be formed, and it cannot be consumed in the same furnace, its presence indicating that the furnace is wanting in those conditions essential for the completion of combustion."

OCEAN TELEGRAPHY.—THE FOREIGN CONNECTIONS OF NEW YORK CITY AND THE EXISTING RATES OF CHARGES.

Telegraphic communication between the United States and the West Indies is maintained over the following routes: From Punta Rassa, Florida, *via* Key West to Havana by cables, thence by land lines to Batabano; thence by cable to Santiago de Cuba; thence by cable to Kingston, Jamaica. From Kingston a series of cables extend to Demarara, South America, touching at Porto Rico, St. Thomas, St. Kitt's, Antigua, Guadaloupe, Dominica, Martinique, St. Lucia, St. Vincent, Barbadoes, Grenada, and Trinidad. A cable also extends from Jamaica to Aspinwall on the Isthmus of Panama.

A cable steamer is now on her way to Trinidad to lay a cable from Port of Spain, Trinidad, to Ponce, Porto Rico, touching at St. Croix, after which she will proceed to lay a cable between Cienfuegos, Cuba, to Jamaica. When these are completed, the United States and West Indies will be substantially united by a double series of cables, so that, in case of failure of any one of them, communication will not be interrupted. The shore ends of a cable to extend from Demarara, South America, to Cayenne, South America, were laid last month, and the cable steamer Hooper is now on her way to Cayenne, to lay the deep sea cable to Demarara. When this link is laid, there will be a complete line of telegraphic communication between the United States and Rio Janeiro, South America; and when another link is laid between Rio Grande do Sul and Maldonado, Uruguay, the United States will be in telegraphic communication with all of South America, bordering on the Atlantic ocean, north of Buenos Ayres, and with Chili on the Pacific. A singular fatality has thus far attended the laying of the cable between Rio Grande do Sul and Moldonado. The telegraph steamer Gamas was first wrecked in attempting to lay it, and more recently the La Plata was chartered to pursue the work and was wrecked in the Bay of Biscay, the cable and all persons on board being lost.

Until the cable is laid down between Cayenne and Demerara, communication between the United States and other parts of South America must be forwarded *via* Europe, the cable between Lisbon, Portugal, and Pernambuco, Brazil, furnishing the only means of telegraphic intercourse.

Communication between the United States and England is maintained by land lines to Sydney, Cape Breton, thence by cables, to Placenta, Newfoundland, thence by land lines to Hearts Content, Newfoundland, thence by three cables to Valentia, Ireland, thence by land lines to Wexford, Ireland, thence by cable to Haverfordwest, England, thence by land lines to London.

Communication between the United States and France is maintained by cable from Duxbury, Mass., to St. Pierre, and thence by cable to Brest, France. Communication between Great Britain and the various continental states is transmitted over two cables to Denmark; two to Germany; two to Holland; two to Belgium; one to Norway; one to Portugal; two to Spain; and six to France.

There is one cable between France and Denmark; one between France and Spain; two between France and Algeria; two between Portugal and Gibraltar; one between Gibraltar and Malta; one between Algeria and Malta; two between Sicily and Gibraltar; one between Malta and Alexandria; one between Italy and Alexandria, touching at Corfu, Zante, and Candia; one cable between Russia and Turkey, through the Black Sea; one between Norway and Denmark; one between Denmark and Sweden; one between Sweden and Russia; one between Denmark and Russia; one between Sweden and Germany; one between Egypt and India, through the Red Sea and Indian Ocean, touching at Aden; one between Persia and India, through the Persian Gulf, touching at Gwadar in Beloochistan; one from Madras, India, to Penang in the Strait of Malacca; one from Penang to Singapore; one from Singapore to Saigon, Cochin China; one from Saigon to Hong Kong and Shanghai, China; one from Shanghai to Nagasaki, Japan; one from Nagasaki to Hiogo and Yokohama, Japan; one from Nagasaki to Wladivastok, Asiatic Russia; one from Singapore to Batavia, Java; one from Java to Australia; one from Australia to Tasmania or Van Diemen's Land. The following cables are projected: From Australia to New Zealand; Ceylon to Australia; Singapore to Borneo; Borneo to Luzon; Luzon to Hong Kong; Yokahama to Hokodadi; Siberia, mouth of the Amoor, to Kamtchatka; Calcutta to Penang; Hong Kong, China, to San Francisco, touching at the Sandwich Islands; Havana to Vera Cruz; Aspinwall, Isthmus of Panama, to Carthagena, South America; Panama to Buenaventura, New Grenada; Buenaventura to Callao, Lima; Callao to Valparaiso, Chili; England to Virginia, touching at the Azores and Bermudas; Portugal to New York, touching at the Azores; Scotland to Labrador, touching at the Faroe Islands, Iceland, and Greenland.

Communication between England and India is mainly confined to the following routes: First, from Penzance on the southeastern coast of England to Lisbon, Portugal; thence to Gibraltar; thence to Malta; thence to Alexandria, Egypt; thence by land line to Suez, and thence by cable to Aden and Bombay. Second, by cable from Lowestoft, England, to Emden, Germany, thence by land line, *via* Berlin, Germany, Warsaw, Jitomer, Odessa, Kertsch and Tiflis, Russia; Teheran, Bushire, Henjaum, and Jask, Persia; Gwadar, Beloochistan, and Kurrachee, India. This is known as the special Indo-European line, and is worked in one circuit from London to Teheran, a distance of six thousand miles. From Kurrachee and Bombay, land lines extend to Calcutta, Madras, and Paumben. From Paumben a cable extends to the Island of Ceylon. From Madras a cable extends to Penang and Singapore. From Singapore cables extend to Saigon, Cochin China, and thence to Hong Kong and Shanghai in China and Nagasaki, Hiogo, and Yokohama, in Japan. From Nagasaki a cable extends to Wladivostok, the terminus of the Russian land lines in Siberia. From Singapore a cable extends to Batavia in the Dutch island of Java; from Java a cable extends to Port Darwin, Australia, and there connects with a land line extending to Victoria, Australia; from Victoria a cable connects with Tasmania or Van Diemens Land. Telegraphic communication exists between Victoria, British Columbia, and Hobart Town, Tasmania, embracing 273 degrees of longitude, and thus lacking but 87 degrees of encircling the globe; and when the projected cable from San Francisco to China is laid, the circle will be completed. When this latter enterprise is carried out, the telegraphic correspondence between North and South America and the West of Europe, with China, Japan, and Australia, will take this route, as it will be the shortest, cheapest, and most expeditious.

The telegraphs of the world, aerial and submarine, embrace 385,872 miles of line, 871,417 miles of wire, and 30,150 stations. The annual traffic amounts to about 80,000,000 messages.

The tariff upon telegraphic despatches from New York to other countries is as follows: Great Britain and Ireland $1 per word, France $10 for 10 words or less, Cuba $5.40 for 10 words or less, Jamaica $7.75, Porto Rico $11.50, St. Thomas $11.88, St. Kitt's $12.75, Antigua $13.00, Guadaloupe $13.38, Dominica $13.75, Martinique $14, St. Lucia $14.25, St. Vincent $14.50, Grenada $15.00, Barbadoes $15.13, Trinidad $15.50, Demarara $17.50, Berbice $17.50, Aspinwall $12.75, Panama $13.75, Aden, Arabia, $20.00, Port Darwin, Australia, $56.62, New South Wales $57.88, South Australia $56.62, Victoria, Australia, $57.12, Tasmania and Queensland $59.12.

Austria and Hungary $11.50, Baden $11.50, Belgium $10.84, Channel Islands $11.66, Denmark $11.40, Germany $11.10, Holland $11, Norway $11.80, Portugal $12, Roumania $11.88, Russia in Europe $12.50, Servia $11.88, Spain $12, Sweden $11.75, Switzerland $11.75, Turkey in Europe $12.25, Wurtemberg $11.50.

Beloochistan $18, Bushire, Persia, $16.12, Ceylon $20.50, Hong Kong, Amoy, and Shanghai, China, $40, Saigon, Cochin China, $38.50, Corfu $12.50, Egypt $15.30, Gibraltar $12.75, Greece $12.75, India $20, Japan $50.38 to Nagasaki and $52.62 to Hiogo, Osaka, Simonosaki, Yeddo, or Yokohama.

Java $40.62 Madeira Islands $15.38, Malta $12.50, Penang $33.50, Persia $16.12, Russia in Asia from $13.12 to $19.16, Cape de Verde Islands $24.38, Singapore $37.50, South America: Buenos Ayres $68.75, Chili $68.75, Montevideo $68.75, Pernambuco $40.50, Bahia and Para $51.50, Rio de Janeiro $56.50, Santos $62.25, Rio Grande do Sul $63.25.

Machine Belts.

In a recent paper read by John W. Sutton, M. E., before the New York Society of Practical Engineers, the author made the following observations:

Although the use of belts for the transmission of power is not, strictly speaking, an American invention, the great improvements made in this country have caused it to be known in Europe as the American system. In Europe the greater part of the power is transmitted by cog wheels, but in this country 99 per cent is transmitted by belting. The latter is used everywhere, from the sewing machine to the 500 horse power engine of the largest factory. Belts can be run in any way, at any angle, of any length, and at any speed, and can be put up by any one of ordinary skill. They can be made of any flexible material—leather, rubber, gutta percha, cloth, paper, raw hide, cord, or wire—and they may be either round or flat; and the last novelty is a sheet iron belt, and it is said to work well. Every one uses them. While so handy and so popular, they have one fault. They are not positive. If you start from the motor with a certain number of revolutions, you lose a portion of them with every belt used. This is the only fault of the system. It is noiseless, yielding, and regular, but, unlike cog wheels, it is not positive. The number of revolutions that are lost may, and do, vary continually by changes of the load or of the atmosphere. It is upon these peculiar changes of our favorite system that I propose to speak to night. Belts derive their power to transmit motion from the friction between the surface of the belt and the pulley, and from nothing else, and are governed by the same laws as friction between flat surfaces. The friction increases regularly with the pressure.

The lecturer then gave the results of some experiments with belts and pulleys to prove this. He found that there was a great difference in the friction of belts, and it was due to their elasticity of surface, that is, the more elastic the surface, the greater the friction. He made experiments with a pulley and belt, moved by a lever and spring balance, to show the difference in the actual friction between the grain and flesh sides of a leather belt in contact with a