HAECKEL ON THE HUMAN PEDIGREE.

The "Schöpfungsgeschichte" of Professor Ernest Haeckel, of the University of Jena, has recently been translated into English and published under the title of "The History of Creation." The work is a greatly condensed epitome of the thoughts of one who has probably reached the *ultima thule* of scientific rationalism; but the admirable clearness with which the great theories which are dividing the scientific world into two hostile camps, and which are constantly widening the breach between scientific thought on one hand and theological dogma on the other, are here presented and amplified will command for the treatise the attentive study even of those to whom the doctrine of man's origin and development, as here enunciated, is most repugnant.

Dr. Haeckel's theory includes both that of Lamarck and that of Darwin. With Lamarck, he holds that all animal and vegetable species are descended from common, most simple, and spontaneously generated prototypes; and then he adopts Darwin's conclusions in showing us why a progressive transformation of organic forms took place, and what causes, acting mechanically, effected the uninterrupted production of new forms and the ever-increasing variety of animals and men. Dr. Haeckel, however, sets before himself the task of establishing, in the light of the above theories, a probable scheme of the genealogical relationship of organisms. And to this he brings the ripe fruits of extended research, and of a vast store of knowledge in biology and kindred sciences, a knowledge in which he is unexcelled. He thus deals with the descent of man in a directly practical sense, while Darwin only treats it in a general way; and at the very outset he disagrees wholly with Darwin in the latter's final conclusion relative to the descent of all organic beings "from some primordial form, into which life was first breathed by the Creator." In a word, Haeckel sets about constructing a genealogy for the race—and indeed for all animated nature—with the same coolness with which an antiquary would hunt for a family pedigree or a lawyer prepare an abstract of a title to a piece of real estate. And in this work he uses three powerful aids: first, the study of the development of the individual, which he declares to be a short, quick repetition of the development of the tribe or chain of ancestors to which it belongs, determined by the laws of adaptation and inheritance;" second, the study of the development of the tribe from palæontological and geological records; and third, the study of comparative anatomy, or the investigation of the chain of different, but related and connected, forms which exist side by side at any one period of the earth's history. Regarding all these, he affirms that the laws of inheritance and adaptation known to us are completely sufficient to explain the perfect parallelism of the three developments.

In the beginning was the fire mist, thinks our author, adopting the theory of a gaseous chaos which formed the basis of Kant's "Cosmogony." By a universal rotary movement in this nebulous Universe, portions aggregated, and these aggregations, by refrigeration, changed into masses of fiery fluid. The latter, cooling and condensing, became as molten metal. An outer crust formed on the new worlds, and thus, "by the inherent forces of eternal matter, entirely without supernatural interference, the solar and planetary systems came into being. When our earth's crust had so far cooled that the water, present hitherto as a gas, could condense into liquid form, then came into existence the primordial germs of life.

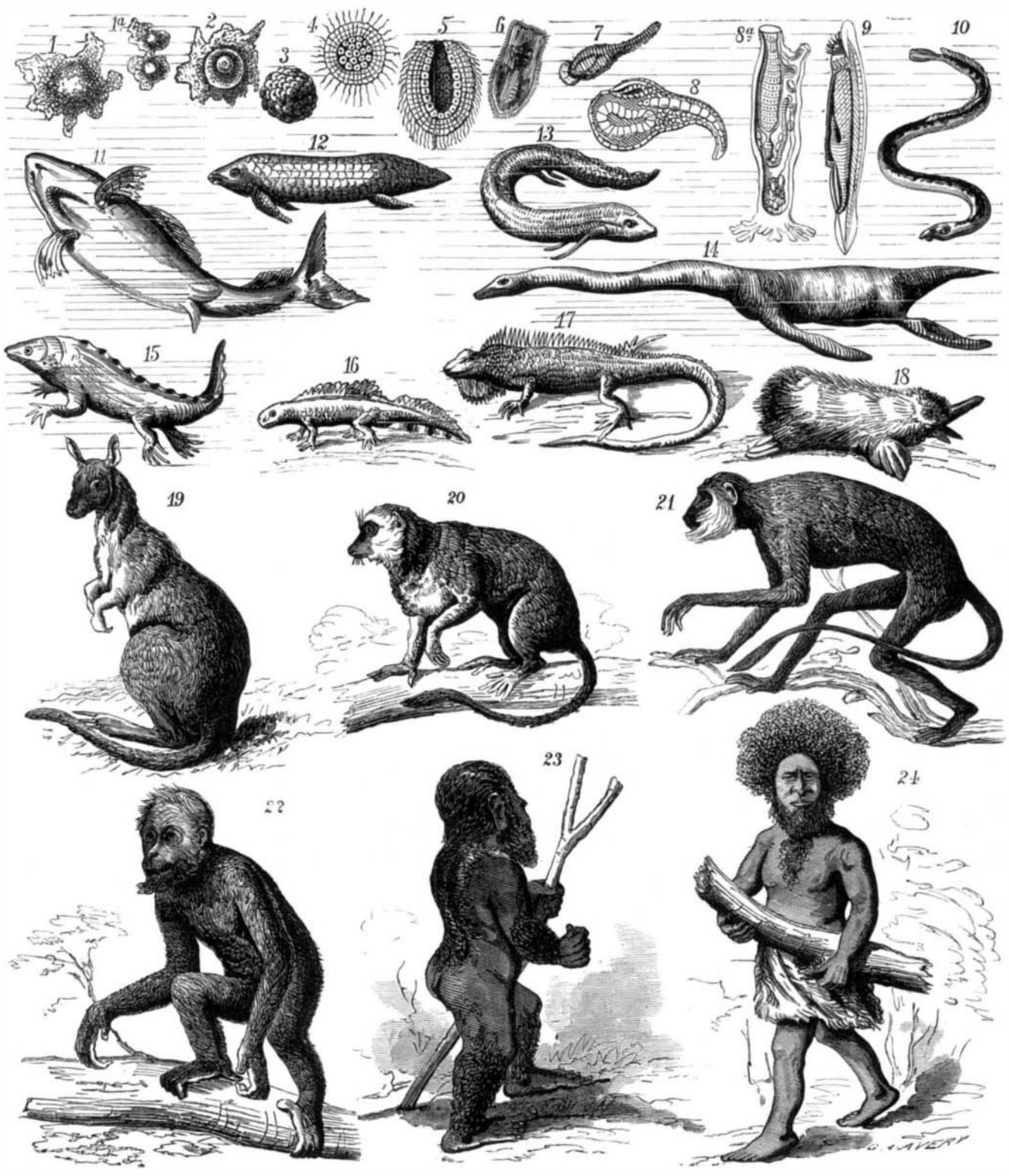
In the narrow limits of this article it would be impossible to trace every link of the chain which, from this point, Haeckel forges with infinite care; but we may note the stages into which he divides the pedigree of man, and, by the aid of the accompanying engravings (which are not drawn to relative scale), convey an idea of the being which forms or formed a near or exact type of each stage of development.

We are now able to produce in the laboratory certain combinations of carbon, oxygen, nitrogen, and hydrogen, which are similar, in the complexity of their constitutions, to the combination entering into the mere lump of albumen which forms the body of the still existing moneron (1). This is the simplest of all organisms—as simple as any crystal which consists of a single inorganic combination. "Now," says Dr. Haeckel, "there is absolutely no reason for supposing that there are not conditions in free nature, also, in which such combinations could take place;" and he inclines to the view that such conditions existed at the early epoch of the earth's history, following the formation of liquid water. This combination, taking place, produced a primeval mucus or plasma, capable of life; and this plasma simply needed to individualize itself, in the same way as the mother liquor of crystals individualizes itself, in crystallization, to produce crystals. Thus in the Laurentian period arose the earliest progenitor of life—a mere lump of protoplasm, but capable of nutrition, and of multiplying its species by self division (1 *a*).

By the process of segregation, taking place in the homogeneous viscid body, a kernel was formed within, differentiated from the surrounding plasma, and producing thus the simple cell, of which the low organism, still existent and known as the amœba (2), is a type. By self-division, the cell fell into a mass of simple and equiformal amœba-like cells, each exactly similar to the other, and each containing a kernel. These groups of cells are termed synamœbæ (3), and the conformation of the organism reminds one of a mulberry. But as development progressed, the cells lying on the surface extended hair-like processes, which, by striking against the water of the primeval ocean in which the creature existed, kept the body rotating; and so another differentiation occurred, the external cells covered with cilia differing from the non-ciliated internal cells. These organisms are called ciliated larva or planeads (4). From the planeads arose the primeval stomach animals, the gastræads (5), possessing a simple oval or globular body, which enclosed a simple cavity having a mouth.

At this point we reach two divergent lines: One branch of gastræads gave up free locomotion, adhered to the bottom of the sea, and developed into zoöphytes or animal plants; the other branch retained free locomotion and developed into the primary form of worms. In these last appeared the first formation of a nervous system, the simplest organs of sense, secretion, and generation. The nearest akin to these primeval forms are the ciliated gliding worms (*turbellaria*), of which one is represented at 6 Through the formation of a true body cavity and blood, within the gliding worms, arose the soft worms, which include very many different intermediate stages. A type of one of these links is shown at 7. Next, by the formation of a dorsal nerve marrow, and of the spinal rod which lies below it, were produced the sack worms (8 and 8 *a*). It is just the position of this axial skeleton (8), between the dorsal marrow on the dorsal side and the intestinal canal on the ventral side, which is most characteristic of all vertebrate animals, including man, and also of the larvæ of the ascidiæ here represented. Now followed the formation of body segments, the further differentiation of the organs, a more perfect development of dorsal marrow and spinal rod, and probably the separation of the two sexes—producing the acrania or skull-less animals, of which the still living lancelet (9) affords a faint dea

We next meet the development of the first brain. It was formed out of the anterior end of the dorsal marrow, while the anterior end of the dorsal chord developed into a skull. The first animal possessing a brain was similar to the lamprey (10), a single nostriled creature. This single nostril divided into two lateral halves; a sympathetic nervous system, a jaw skeleton, a swimming bladder, and breast and ventral fins appeared, and so, in the Silurian period, originated the shark-like ancestors (11) of all fish. By adaptation to life on land, by the transformation of the swimming bladder into an air-breathing lung and of the nasal cavity into air passages, arose the mud fish, to which the still living ceratodus or grass-eating fish (12), the lepidosiren (13), bear a near resemblance. At the same time originated the now extinct sea dragons, like the plesiosaurus (14). Out of the mud fish, by the transformation of the paddling fins into five-toed legs, and also by the more perfect differentiation of various organs, came the most ancient amphibians, which, like the axolotl (15) of the present day, besides possessing lungs, retained throughout life regular gills. From these arose the tailed amphibians, which, like the newts or salamanders (16) lost the gills which they had possessed in early life, but retained the tail. They originated by accustoming themselves to breathe only through gills in early life, and later in life only through lungs. In the mesolithic or secondary period, the tailed amphibian, through loss of gills, by the formation of the amnion, of the cochlea, of the round window of the auditory organ, and of the organs of tears, produced the primeval amniota, of which the true lizard (16) may be taken as a type. Here we meet another branching, for on one hand the amniota developed into reptiles and thence into birds, and on the other into mammalia. Following the second branch, we find that, by the transformation of scales into hair, and by the formation of a mammary gland, were next evolved the promammalia, closely related to the beaked animals, such as the ornithorincus (18) Now comes the transition to placental animals, by the promammalia and the evolution of the marsupials, such as the kangaroo (19).



THE MODERN THEORY OF THE DESCENT OF MAN.

Out of the rat-like marsupials, by the formation of the placenta, development of the commissures of the brain, etc., come the semi-apes, of which the lemur (20) is an existing type. From the semi-apes, by the transformation of the jaw, and by claws on the toes becoming nails, arose the narrow-nosed tailed ape (21). Then the tail disappeared, the hairy covering partially departed, and the brain above the facial portion of the skull developed, producing the orang-outang (22), or the chimpanzee, or the gorilla—the human apes of the miocene period. These apes gradually became accustomed to an upright walk, and the separate pairs of legs differentiated. The fore hand became a human hand, the hind one, a foot. Thus was produced the ape man, the pithecanthropus (23), who existed toward the end of the tertiary period. Genuine man developed out of the ape-like man by the gradual development of the animal language of sounds into a connected and articulate language of words. These went hand in hand with the higher differentiation of the larynx and the brain. Primæval man, Haeckel divides into the straight haired and the wooly-haired. From the last arose the Papuans (24), the oldest of all still living human species, and nearest related to the original primary form of wooly-haired men. Next come the Hottentots, belonging to the same branch as the Papuans. To the other branch belong the Negroes and the Kaffirs.

The straight-haired men generated the Australians and Pro-Malays, the latter, the Mongols and the Malays. The Mongols produced the eighth and ninth species, the Americans and the Arctic Men, and the last produced the Esquimaux. The Malays have developed into no other distinct species. A third branch of the Pro-Malays, however, produced the Dravidas, from whom sprang the Cingalese, the Nubians, and the Mediterranese, thus completing the series of twelve species and thirty-six races.

Tracing, lastly, the history of nations or historic tribes, the Mediterranese gave rise to four races, the Semites and Basques in one branch, the Indo-Germans and Caucasians in another. From the Indo-Germans, in regular progression, came Sclavo-Germans, the primeval Germans, the Germans, Low Germans, Saxons, and, lastly, Anglo-Saxons. And here our chronicle ends, for thus over a lapse of thousands of millions of years—ages, according to Haeckel, countless and incalculable save by mere approximation—we have traced the development of man from the clot of albumen to the race which now populates these United States.

The Heat of Slags and Economy of Furnaces.

From two recent papers of Professor Grüner we obtain the following interesting data: The experiments on which they are based were made with a water calorimeter of 18 kilogrammes (nearly 40 lbs.) weight, and upon quantities of molten material varying from 50 to 100 grammes (1·6 to 3 2 ozs.). The heat is given in French calories, or centigrade units.

The less fusible slags of the blast furnace (accompanying gray pig) possess, on issuing from the furnace, 450 to 500 units. Those proceeding from non-fusible ores, and most frequently associated with white pig, have 400 to 450; white glass (70 per cent silica) heated to the temperature for glass-blowing, 415 to 420; bottle glass under the same circumstances, 380 to 400. The ferruginous and manganiferous scoriæ from the Martin process (54 to 55 per cent silica) require for smelting 410 to 415 units; porphyroidal copper slags from Swansea (60 per cent silica and quartz), 405 to 410; bisilicate protoxide of iron slags (45 per cent silica), 380 to 400; puddling or reheating cinder (30 to 35 per cent silica), 320 to 330; monosilicate slags from lead and copper furnaces (28 per cent silica), 275 to 300. Pure, well carburized pig requires for melting 225 to 230 units; gray silicious pig (3 per cent carbon), 250 red copper, which, like the foregoing, has its melting point at about 1,200° C. (2,192° Fah.) may be brought to that temperature with 160 to 165 units of heat. Iron copper matte requires 230 to 240; iron lead matte, 200. Lead, which has, like platinum, a very low specific heat, can be brought to clear orange redness with 45 to 50 units.

From the foregoing figures, and other researches which he has previously made public, Professor Grüner has deducted the following interesting statements:

In the wind furnace, which is from this point of view the most imperfect apparatus, there is utilized, in the fusion of steel in crucibles, but 1 7 of the total heat capacity of the fuel, or at most 3 per cent of the heat generated. In the reverberatory, when steel is melted in crucibles, the useful effect is 2 per cent of the total heat, or 2 per cent of the heat generated. In the Siemens crucible furnaces, 3 to 3·5 per cent; in Siemens glass furnaces, operating on a large scale, 5·5 to 6 per cent; in ordinary glass furnaces, 3 per cent; in fusion upon the open hearth of a reverberatory, of glass, 7 per cent; of iron, 8 per cent; in well arranged Siemens and Ponsard furnaces, up to 15, 18, and even 20 per cent of the total heat is utilized.

The caloric effect is much greater when the fuel is mixed with the material to be fused. In old cupolas, 29 to 30 per cent; and in modern cupolas, higher, more rapid in working, and narrower in zone of fusion, upwards of 50 per cent is realized. Large iron blast furnaces utilize, according to their working, 70 to 80 per cent of the heat generated, or 34 to 36 per cent of the total heat which the complete combustion of the fuel would set free.—*Engineering and Mining Journal.*

Cat Racing.

Since the siege of Paris a great deal of interest in the breeding and training of homing pigeons has been created by the admirable service rendered by these swift-flying messengers from the besieged inhabitants of that city to friends outside. The birds in which the homing powers were found to be most strongly developed were of a breed of Belgian pigeons now pretty generally known as Antwerps. This homing faculty, it seems, a Belgian society is now endeavoring to develope in the domestic felines of that country by inaugurating cat races, on much the same principles as pigeon-flying matches. A cat race was very recently instituted in Liège. There were thirty-seven competitors, all of which were liberated some distance from the town, and the prize was awarded to the animal which reached its home in that town first. They were started at 2 P. M., but the distance they had to traverse is not stated; suffice it to say, the first prize animal won in a canter, as he arrived at home at 6:48 P. M. the same evening, the second cat not appearing until 2:24 A M., the following morning.

DECISIONS OF THE COURTS.

United States Circuit Court---District of Massachusetts.

R. C. ANTHONY *et al. vs.* JOHN CARROLL.—ASSIGNMENT OF CLAIMS FOR PATENT DAMAGES.

[In equity.—Before SHEPLEY, J.—Decided October, 1875.]

SHEPLEY, J.:

This bill in equity, filed July 27 1874, alleges the grant of letters patent of the United States to Marie Amédée Charles Mellier for a new and useful improvement in making paper pulp; the assignment, by Mellier, to one Buchanan, June 19, 1857, of all Mellier's right and title to the invention secured by the letters patent; the assignment by Buchanan to Buffam, trustee of the American Wood Paper Company, October 14, 1863; and the assignment by Buffam to that company, June 16, 1865, of his legal estate in the patent. The infringement by the defendant, and consequent profit to defendant, and damage to the American Wood Paper Company, is alleged from October 14, 1863, to August 19, 1867.

The bill alleges an assignment, August 19, 1867, from that company to Gardner Harland of "all their claims against the said defendant for the said damages and profits for the said infringement during the said period," and an assignment by Harland to R. C. Anthony, one of complainants, October 4, 1873, of all said claims. The bill is brought by R. C. Anthony, a citizen of New York, and the American Wood Paper Company, a corporation created by the Legislature of the State of Rhode Island and located at Providence in said State, against the defendant, a citizen of Massachusetts, for a discovery and account of profits, and for damages and other relief.

The defendant has demurred generally to this bill, and in support of his demurrer relies upon the bar of the statute of limitations of the Commonwealth of Massachusetts, and also upon the character of the claim alleged in the bill. The limitation in cases of tort in this Commonwealth is six years. (Gen. Stat. of Mass., Ch. 155, Sec. 1.)

As a general rule, the laws of the State in which a national court sits must be the rules of decision in such court. The thirty-fourth section of the judiciary act provided that "the laws of the several States, except when the Constitution, treaties, or statutes of the United States shall otherwise require or provide, shall be regarded as the rules of decision in trials at common law in the courts of the United states in cases where they apply." It is too well settled to require the citation of authorities that, in ordinary actions at common law, the statutes of limitation of the State where the suit is brought may be pleaded in bar under this provision of the judiciary act.

Whenever the cause of action is one cognizable by a court of common law, a court of equity, in accordance with the general rules of equity jurisprudence, follows the law in relation to the limitation of actions. The question presented is whether this rule applies to actions, the subject matter of which is under the exclusive control of the national legislature and judiciary.

Mr. Justice Swayne held, in the case of Collins *vs.* Peebles (2 Fisher, 541), that the State statutes could not limit the time within which actions for the infringement of letters patent might be brought in the courts of the United States; that Congress having failed to legislate upon this subject, there was no limit to the time for bringing such actions; and Mr. Justice Grier is reported, in a note to the above case (2 Fisher, 543), to have so decided in the case of Parker *vs.* Halleck. To the same effect is the decision in Read *vs.* Miller (3 Fisher, 310).

In the case of Parker *vs.* Hawk (2 Fisher, 58), the learned Judge of the Southern District of Ohio decided that the limitation act of Ohio applied to an action on the case in the Circuit Court of the United States for an infringement of a patent. It is stated, in a note to that, that the decision was affirmed by Mr. Justice McLean, Parker *vs.* Hawk was decided on the authority of McCluny *vs.* Silliman (3 Peters, 270). But McCluny *vs.* Silliman is by no means decisive of the question. That was an action on the case against the defendant as register of a land office in Ohio for non-feasance, in refusing at the request of the plaintiff to enter his application for the purchase of certain government lands, as required by an act of Congress. Such an action against an officer for non-feasance could have been prosecuted in the State as well as in the federal courts. The cause of action was one over which the national and State courts had concurrent jurisdiction. Such a case clearly falls within the provisions of section thirty-four of the judiciary act. It is one of the cases where the laws of the State apply. But how it can be contended that the laws of the States apply to an action for the infringement of a patent, when the right of action is exclusively under the Constitution and laws of the United States, when the form of the remedy is prescribed by the acts of Congress, and when the Circuit Courts of the United States are clothed by statute with exclusive jurisdiction over the whole subject matter?

Should the legislature of a State pass an act in express terms limiting the time for bringing an action in the federal courts for infringement of patent rights, there can be no reasonable doubt that such a statute would be unconstitutional and void. The policy of the government to provide a uniform system of rights and remedies throughout the United States upon the whole subject matter of patents for new and useful inventions and discoveries, by placing it under the control of Congress and the federal courts, would be frustrated if such State legislation could directly or indirectly limit, restrict, or take away the remedy. For these reasons, I think no State statute of limitation can be pleaded in bar of this action.

It is contended in support of the demurrer that a court of equity will not entertain a suit for the benefit of an assignee of a right of action for a tort. The question whether a court of equity would entertain this bill, if brought only in the name of an assignee, of a right of action for a tort, does not necessarily arise in this case, as this bill is brought by the assignor, who is also the owner of the patent, and who, under the rules of equity pleading, joins with him, the assignee, he being beneficially interested therein. The better opinion seems to be that, if the claim be for an injury to one's estate or property, and not to a mere solatium for an injury done to the person or personal feelings of the assignor, the claim may be assigned. (The People *vs.* Hoga, Common Pleas, 19, Wendell, 73; McKee *vs.* Judd, 2 Kernan, 622; Milnor *vs.* Metz, 16 Pet., 221.)

The demurrer of defendants is not sustained.

[*Francis C. Nye* and *L. C. Ashley* for complainants.
Browne & Holmes for defendant.]

United States Circuit Court--- District of Massachusetts.

JOHN KENDRICK *vs.* THOMAS A. EMMONS.—WEAVING APPARATUS.

In equity.—Before SHEPLEY, J.—Decided October, 1875.

An English patent, taken out surreptitiously by any person, who, without the knowledge of the American inventor, and without authority from him, endeavored to appropriate the benefits of his invention, would not thereby deprive the real inventor of any of his rights.

SHEPLEY, J.:

The principal questions presented in this case were fully heard and argued upon the motion for an injunction *pendente lite*. Upon a careful revision of the case and of all the new evidence now before the court, no good reason appears for any modification of the views expressed upon the hearing of the motion. The reasons are fully stated in the opinion upon that motion, and it is not necessary to repeat them. The conclusion is that the bifurcated plate in the English machine, constructed substantially according to the patent to Ellis and Sladdin, sealed July 12, 1864, and sometimes described as the retainer or fork, as well as the contrivance substituted for it in the Sladdin machines in evidence, which perform the same office, are infringements of the third and fourth claims of the reissued patent No. 5,282 to Joseph Winsor, for an improvement in machines for making weaver's harness.

Additional evidence and elaborate opinions of experts have been introduced at the final hearing upon the disputed point, whether in the machines of the Sladdin type the size of the loop is gaged by the needle or by the retainer and its substitutes. Question is also made whether the fingers in the Winsor machine, in fact, gage and determine the size of the loops. The theories of the defendant's experts upon this subject are ingenious and elaborate; but upon a close examination of the two machines, when operating to make heddles, one cannot fail to discover that, as a practical result, the length of the loop in the heddle is limited in the Winsor machine by the fingers W1 and W3, and in the Sladdin machine by the bifurcated plate or retainer. Each of these devices determines the size of the eye or loop by a gage outside of the eye itself, and this operation constituted one of the prominent features of Winsor's invention. This feature of his invention enableshim to dispense with the use of the laying bar, around which the eye of the heddle had before been formed, and thus to dispose of one of the great obstacles in the way of making a loom harness automatically, which Winsor was first to accomplish. This office of determining the distance from each other of the two extremities of the eye by a limiting device outside of the eye itself, the retainer of the English machine performs for the same and in substantially the same manner as the fingers in the Winsor machine.

The mistake in copying the specifications in the re-issued patent, by which the hooks are supposed to be described as gaging the length of the eyes, is so obviously a mistake in description, and so easily corrected by reference to the other parts of the patent and the machine described, that it does not impair the rights of the patentee. The word "they," when used in that clause of the specifications for the second time, evidently refers to the fingers and not the hooks, as determining or gaging the size of the eye.

It is contended that, as letters patent had been granted on the invention in England in April, 1854, for the term of fourteen years from their date, prior to the application for letters patent of the United States, the letters patent of the United States expired with the English patent, and could not be legally extended after the expiration of the patent.

The English patent was not sealed previous to the 15th of June, 1854. It was taken out surreptitiously by some one who, without the knowledge of the American inventor and without authority from him, endeavored to appropriate the benefits of his invention. If a person had thus surreptitiously taken out letters patent in this country for the invention of another who was diligently perfecting his invention, he would not thereby have deprived the real inventor of any rights. It is not believed that, by taking out in advance an English patent, he could accomplish more than he could have done by taking out letters patent in this country. Moreover, as the English patent was not sealed prior to June 15, 1854, it was not more than six months prior to the application for letters patent in this country; and under the act of 1836, he had a right to take out his patent in this country for the full term, although he had taken out one in a foreign country, the same having been published at any time within six months next preceding the filing of his specifications and drawings. The act of 1839 was not intended to limit the inventor's rights under the act of 1836, but to enlarge them. He still had the right to take out his patent for the full term, notwithstanding that he had obtained and published a foreign patent within six months. But after the six months he had, for a further specified time, a right to take out his patent, subject to the conditions and specifications specified in the act of 1839. But the provision in the act of 1839, with reference to the effect of his invention, having been patented in a foreign country more than six months prior to his application, evidently refers to the fact of its having been patented by him, the applicant for the American patent.

In the interlocutory decree made on the motion for a preliminary injunction, and in what has hereinbefore been stated upon the subject of infringement, reference has been had solely to the infringement of the third and fourth claims of the reissued patent. The question of infringement of the eighth claim remains to be considered.

The eighth claim is for—

"8. The combination of the sliding bar, or its equivalent, and the rods acting together, substantially as described, whereby the leese is preserved after it is formed, and the heddles are drawn away from the locality where they are formed on the stationary slats, and the movement of the sliding bar, or its equivalent, and the band attached thereto, to which heddles are tied in the process of formation."

Winsor's rights under this claim also are to be considered in the light of the fact that, prior to the date of his invention, there had never been a machine constructed in which was organized any apparatus for making the difficult side of a weaver's harness, combined with a sliding bar, or its equivalent, for drawing away the heddles, nor had there, prior to the invention of Winsor, been any machine having any combination of the sliding bar, or any equivalents of any such rods as are described in the Winsor patent, for receiving and preserving the leese of the heddles. The evidence in the record proves that the Winsor invention antedates any devices which are relied upon as anticipating this portion of the Winsor invention.

In the Ellis and Sladdin machine we find the same sliding bar for removing the heddles from the locality where they are formed, combined with automatic arrangements for making the heddles. We find, also, slats securing and preserving the leese supported by one end only, as in the Winsor machine, so as to afford the facility of securing the twine at one of their sides or the other by passing them by the end, and by receiving them as they are formed upon the free end, in combination, as in the Winsor machine, with the screws and yoke for moving the heddles along. The Ellis and Sladdin devices appear to be equivalent devices acting in the same combinations to accomplish the same result of preserving the leese after it is formed; and although they, by assisting to form the leese, do more than similar devices do in the Winsor patent, that does not relieve them from liability to the charge of infringement.

The defendants must, therefore, be held to have infringed the third, fourth, and eighth claims of the reissued patent.

Decree for injunction and account as prayed for in the bill.

[*Chauncey Smith, Benjamin F. Thurston,* and *William W. Swan,* for complainant.
Benjamin F. Butler and *A. K. P. Joy,* for defendant.]

NEW BOOKS AND PUBLICATIONS.

THE ELEMENTS OF PHYSICAL GEOGRAPHY, for the Use of Schools, Academies, and Colleges. By Edwin J. Houston, A.M., Professor of Physical Geography and Natural Philosophy in the Central High School of Philadelphia. Price $1.75. Philadelphia, Pa.: Eldredge and Brother, 17 North Seventh street.

This is one of the best school books that we have lately received. It is full of information, which has been thoroughly condensed without losing any of its clearness of explanation; and it is written in a style to interest the young reader, and to induce him to give proper attention to every branch of the subject. The maps and other illustrations are excellent, and the book is evidently the work of a writer who knows how to teach,

THE ECONOMY OF WORKSHOP MANIPULATION, a Logical Method of Learning Constructive Mechanics. Arranged with Questions for the Use of Apprentice Engineers and Students. By J. Richards, Author of a "Treatise on Woodworking Machines," etc. New York city: E. & F. N. Spon, 446 Broome street

Mr. Richards' works on the economy of the mechanical arts are well known, and his new book will enhance his reputation as a fluent and pleasing writer. His views are always sound and enlightened, and his precepts deserve to be learnt by heart by every young mechanic. The chapter on mechanical drawing in the book now before us is an excellent piece of instruction.

THE POLYTECHNIC REVIEW, Devoted to Science as Applied to the Useful Arts. Published Monthly. Subscription $3 a year, payable in advance. Philadelphia, Pa.: Drs. Wahl & Grimshaw, 119 South Fourth street.

This publication is intended to occupy some portion of the extensive field in which we are diligently laboring, and to present to its readers, monthly, all the current information on the many subjects included under the generic name of Science. Its first number has a creditable appearance.

PAPERS RELATING TO THE FOREIGN RELATIONS OF THE UNITED STATES, transmitted to Congress with the Annual Message of the President, December 6, 1875. In Two Volumes.

NOTES ON THE YUCCA BORER. By Charles V. Riley, Ph.D. St. Louis, Mo.: R. P. Studley Company, 221 North Main street.

SCRIBNER'S MONTHLY for March offers its usual attractive table of contents. The number opens with an excellent description of the new buildings of Trinity College, Hartford, Conn., with illustrations. The architecture of these proposed edifices is altogether different from that of any other college buildings in the country, and will attract considerable popular interest. The kindergarten system of instructing very young children is clearly expounded by Dr. Eggleston. Mr. Dorsey Gardner writes upon the struggles and successes of Wilson, the celebrated ornithologist. The editor has some thoughtful essays on "Public Halls" and "Common Schools." Mr. P. T. Quinn contributes some timely directions about laying out small places and suggestions relating to rural topics, and there is a goodly variety of entertaining serial and short stories. Subscription price $4 a year. Scribner & Co., publishers, 743 Broadway, New York.

ST. NICHOLAS for March is, as usual, preternaturally good. If the editress would occasionally introduce something poor within its covers, we should be half inclined to welcome it as a pleasing variety, just as a discord in music often adds to the beauty of the surrounding harmony. Mr. Whittier sends a new and beautiful poem, Mrs. Oliphant the beginning of a series of interesting papers on Windsor Castle, Mr. Charles Dudley Warner and Mr. Bayard Taylor contribute interesting sketches of foreign countries, Miss Alcott continues her pleasant talks; in fact, we cannot pretend to tell half the good things with which the youngsters are provided. The illustrations are as charming in subject and variety as they are artistic, and that is saying a great deal. Subscription price $3 a year. Scribner & Co., publishers, 743 Broadway, New York.

The ATLANTIC MONTHLY for March begins with Mr. T. B. Aldrich's new poem "the Legend of Ara Coeli;" Mr. John Fiske concludes his papers on the "Unseen World," imparting results of modern scientific religious thought; Mr. Charles Francis Adams publishes the first chapter of his excellent essay on the "State and the Railroads," one of the most valuable and thoughtful contributions to the literature of the railway that we have ever read. The beauty of inflation and the advantages of a paper currency Mr. Henry Carey Baird attempts to show in an article, none the less well written and interesting, even if its writer, in the opinion of most people, is on the wrong side of the present important financial controversy. Mrs. Fanny Kemble continues her pleasant "Gossip," Mr. E. W. Jones tells us some new facts about the Welsh in America; and besides a variety of short poems by Dr. Holmes and other well known writers, the editor contributes his usual careful and critical reviews of current literature. Hurd & Houghton, publishers, New York and Boston. $4 per year.

THE ALDINE.—The Aldine Company, 18 and 20 Vesey street, New York, have issued, of this year's numbers, Parts 1, 2, 3, and 4. The engravings, letterpress, and paper are all of the highest standard of art work. Published fortnightly at 50 cents a number, and sold only to subscribers. The publishers announced it as their intention to make it the leading art journal of America. They are fulfilling their promise.