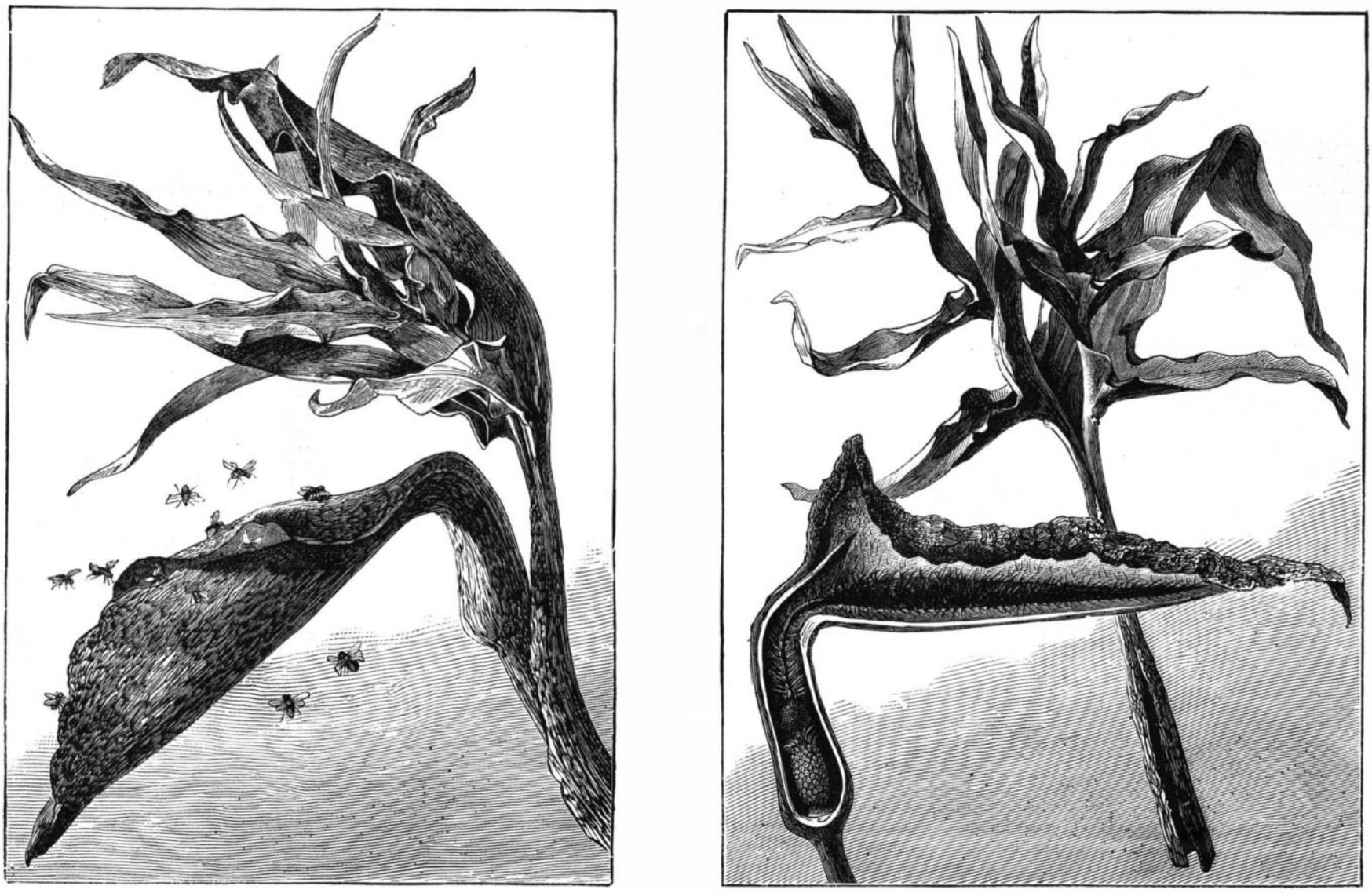
CURIOUS CARNIVOROUS PLANTS.

The *arum Dracunculus* is one of the most curious of that wonderful series of carnivorous plants which at the present time are engaging the closest scrutiny of naturalists. It is a true trap in one sense—inasmuch as it captures the victim which ventures near it; but it relies on little or no mechanical means for securing its prey, but stupefies the living insect by its odor. The flower is horn-shaped, about 11 inches in length, with an opening some 5 inches in diameter. The color within is a dull dark violet, while the interior of the spathe is lined with black, hooked bristles, the whole appearance of the flower being thoroughly repulsive. The illustrations herewith presented, Figs. 1 and 2, represent it at one third its natural size, Fig. 2 showing a section of the flower. It is not certain what attracts the insects, which are usually of the species known as the meat fly and the common house fly. They do not seem to seek for the small quantity of nectar concealed, and yet they cluster about the fatal opening, as if drawn by some overpowering fascination. Overcome by lethargy, they fall inert upon the flower, are lightly held by the bristles, and finally die asphyxiated by the carbonic acid which the plant disengages in large quantities during its inflorescence. Strange as is the action of the *arum*, the method whereby the *mentzelia* takes its prey is even more wonderful. To illustrate on a magnified scale, let the reader imagine a surface thickly covered with strong iron posts, on the sides of which are numerous keen barbs pointing downward. Then between these posts, suppose that jars overflowing with honey are placed. An elephant, let it be imagined, attracted by the profusion of sweetness, inserts his trunk between the posts and finds easy access to the honey. But while he can force his proboscis downward past the barbs turned in that



Figs. 1 and 2.—ARUM DRACUNCULUS.

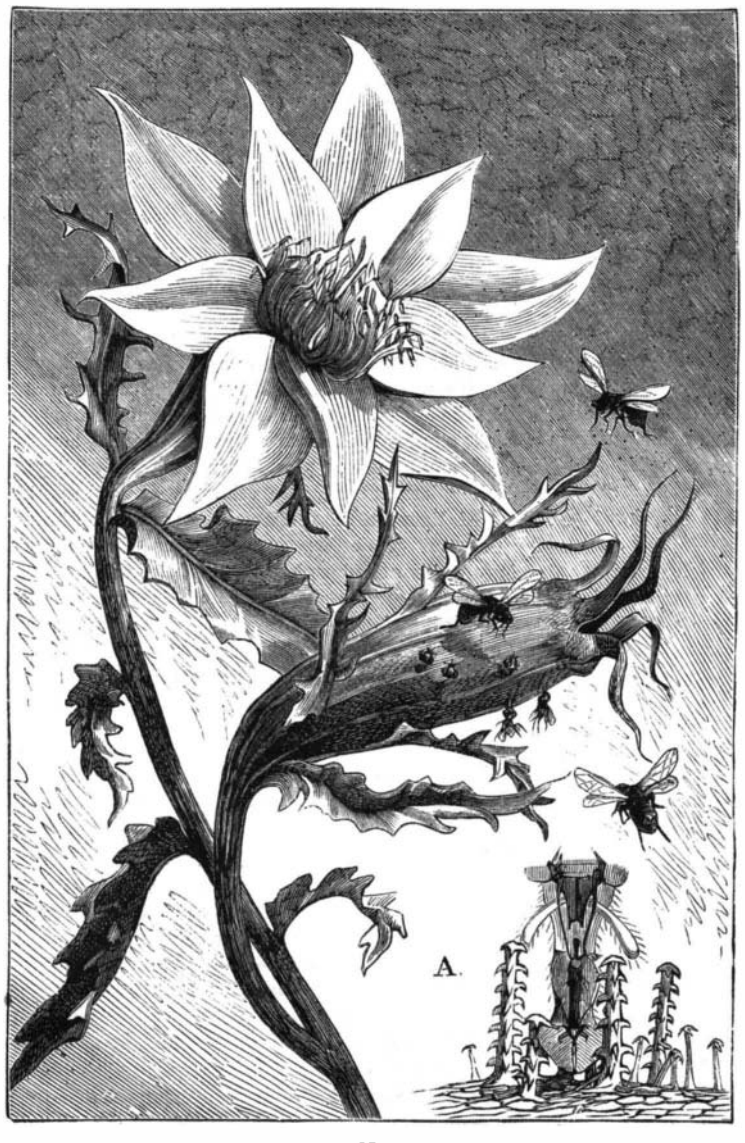


Fig. 3.—MENTZELIA.

Fig. 4.—GRONOVIA SCANDENS.

direction, when he attempts to withdraw it he finds the keen points catch in the flesh, and render it impossible to do so. A terrible struggle follows, the unfortunate animal twisting and writhing in every direction, until finally by an Herculean effort the head is torn from the body, and the latter becomes digested by some potent gastric juice, exuding from the colossal organism of which the trap forms but a portion. Of course this is vastly exaggerated, and it would puzzle an elephant to pull his own head off; but if for the post studded trap, we substitute the surface of a flower, and if we replace the elephant by a fly, we shall have conceived an accurate picturo of what takes place in the peculiar receptacle with which Nature has provided the *mentzelia ornata*. This is very beautifully shown in Fig. 3; and at A, in same figure, is represented the barbed bristles grasping the highly magnified proboscis of the fly. Between the barbed bristles are mushroom-shaped projections, from the summits of which a viscous nectar exudes. This is the honey bait which induces the insect to insert his trunk between the fatal barbs. There is still another plant, *physianthus albens*, which captures butterflies by grasping the proboscis. The construction of the flower is quite complicated, so that the insects are compelled to insert their trunks through a narrow and winding passage in order to reach the nectar. The organ then necessarily comes in contact with an adhesive substance, which prevents its removal.

The *Gronovia scandens*, Fig. 4, is another plant trap, which catches no flies nor possesses any such wonderfully adapted devices as the plants already described. It simply has its branches covered with double barbed bristles of great strength which attach themselves to anything brought in contact with them. The bristles are strong enough to hold lizards, as represented by our engraving, the points inserting themselves in the interstices of the scaly covering of the reptile. Of course the lizard thus held starves to death, and small birds often follow a like fate. We are indebted to *La Nature* for the illustrations.

Popular Fallacies.

Night air and damp weather are held in great horror by multitudes of persons who are sickly or of weak constitutions; consequently, by avoiding the night air, and damp weather, and changeable weather, and weather that is considered too hot or too cold, they are kept within doors the much largest portion of their time, and as a matter of course continue invalids, more and more ripening for the grave every hour; the reason is, they are breathing an impure atmosphere nineteen-twentieths of their whole existence.

As nothing can wash us clean but pure water, so nothing can cleanse the blood, nothing can make health-giving blood, but the agency of pure air. So great is the tendency of the blood to become impure in consequence of waste and useless matters mixing with it as it passes through the body, that it requires a hogshead of air every hour of our lives to unload it of these impurities; but in proportion as this air is vitiated, in such proportion does it infallably fail to relieve the blood of these impurities, and impure blood is the foundation of all disease. The great fact that those who are out of doors most, summer and winter, day and night, rain or shine, have the best health the world over, does of itself falsify the general impression that night air or any other out-door air is unhealthy as compared with in-door air at the same time.

Air is the great necessity of life; so much so, that if deprived of it for a moment, we perish; and so constant is the necessity of the blood for contact with the atmosphere, that every drop in the body is exposed to the air through the medium of the lungs every two minutes and a half of our existence.

Whatever may be the impurity of the out-door air of any locality, the in-door air of that locality is still more impure, because of the dust, and decaying and odoriferous matters which are found in all dwellings. Besides, how can in-door air be more healthy than the out-door air, other things being equal, when the dwelling is supplied with air from without?

To this very general law there is one exception, which it is of the highest importance to note. When the days are hot, and the nights cool, there are periods of time within each twenty-four hours, when it is safest to be in-doors, with doors and windows closed; that is to say, for the hour or two including sunrise and sunset, because about sunset the air cools, and the vapors which the heats of the day have caused to ascend far above us, condense and settle near the surface of the earth, so as to be breathed by the inhabitants; as the night grows colder, these vapors sink lower, and are within a foot or two of the earth, so they are not breathed. As the sun rises, these same vapors are warmed, and begin to ascend, to be breathed again, but as the air becomes warmer, they are carried so far above our heads as to be innocuous. Thus it is that the old citizens of Charleston, S. C., remember, that while it was considered important to live in the country during the summer, the common observation of the people originated the custom of riding into town, not in the cool of the evening or of the morning, but in the middle of the day. They did not understand the philosophy, but they observed the fact that hose who came to the city at mid-day remained well, while those who did so early or late suffered from it.

All strangers at Rome are cautioned not to cross the Pontine marshes after the heat of the day is over. Sixteen of a ship's crew, touching at one of the West India islands, slept on shore several nights, and thirteen of them died of yellow fever in a few days, while of two hundred and eighty, who were freely ashore during the day, not a single case of illness occurred. The marshes above named are crossed in six or eight hours, and many travelers who do it in the night are attacked with mortal fevers. This does, at first sight, seem to indicate that night air *is* unwholesome, at least in the locality of virulent malarias, but there is no direct proof that the air about sunrise and sunset is not that which is productive of the mischief.

For the sake of eliciting the observations of intelligent men, we present our theory on this subject.

A person might cross these marshes with impunity, who would set out on his journey an hour or two after sundown, and finish it an hour or two before sun-up, especially if he began that journey on a hearty meal, because, in this way, he would be traveling in the cool of the night, which coolness keeps the malaria so near the surface of the earth as to prevent its being breathed to a hurtful extent.

But if it is deadly to sleep out of doors all night in a malarial locality, would it be necessarily fatal to sleep in a house in such a locality? It would not. It would be safer to sleep in the house, especially if the windows and doors were closed. The reason is, that the house has been warmed during the day, and if kept closed, it remains much warmer during the night indoors than it is outdoors; consequently, the malaria is kept by this warmth so high above the head, and so rarefied, as to be comparatively harmless. This may seem to some too nice a distinction altogether, but it will be found throughout the world of Nature that the works of the Almighty are most strikingly beautiful in their *minutæ*, and these *minutæ* are the foundation of His mightiest manifestations.

Thus it is, too, that what we call fever and ague might be banished from the country as a general disease, if two things were done. 1. Have a fire kindled every morning at daylight, from spring to fall, in the family room, to which all the family should repair from their chambers, and there remain until breakfast is taken. 2. Let a fire be kindled in the family room a short time before sundown; let every member of the family repair to it, and there remain until supper is taken.

In both cases, the philosophy of the course marked out consists in two things. First. The fire rarefies the malaria and causes it to ascend above the breathing point. Second. The food taken into the stomach creates an activity of circulation which repels disease.—*Hall's Journal of Health.*

The Extension of the Plague.

Our recent English medical exchanges mention, with undisguised apprehension, the fact that already early this spring authentic observers state that the plague has broken out in Bagdad, and is rapidly increasing there; and information from other sources renders it probable that the disease has shown itself in other places in the vicinity of that city, some of which have not suffered before since the new development of the disease in Mesopotamia, three or four years ago. The progress of the epidemic in and about Bagdad last year shows that each year since its reappearance in that district it has covered a wider area, and it will be remembered that last year it crossed the Turco-Persian frontier, and broke out at Shuster, in Khuzistan. From the phenomena of the epidemic to this period it was feared, especially by the physicians on the spot, that, if it should recur in the present year, it must be expected to extend over a still wider area, and show itself in even a more aggravated form than had yet been observed. This opinion is concurred in by Surgeon-Major Colville, the medical officer attached to the British Embassy at Bagdad, and is expressed in his official report, on the subject of the last and previous year's outbreak.

The Turco-Russian struggle in Asia Minor, and the massing of Persian troops on the western frontier of that country, add an additional and most grave factor to this ominous intelligence.

It has been so long since Christian Europe has suffered from this terrible disease that most medical men have never seen a case, and, indeed, for awhile, epidemiologists flattered themselves it had "died out." They yet say that a thorough system of sanitation will certainly check its advance.

Let us hope so; for of all pestilences which have ever scourged humanity, and desolated empires, none approach in magnitude those of the plague. Under the name of "the black death," it fills, as Hirsch remarks, one of the darkest pages in the history of the human race. It devastated every known country of the earth, and penetrated to the remotest mountain hamlets and granges, sometimes sweeping away in a few days every inhabitant, leaving not one to remember the name or to inherit the goods of the family or the village. Long years afterward, travelers would come upon these unknown villages, the houses rotting, the bones of the plague-stricken owners bleaching in the rooms and streets, and no one to say who they had been.

As an epidemic disease, it no doubt spreads from India, that mother of pestilence, where, in the province of Kutch and Guzerat, it is found as an endemic of great malignancy, Far more fatal in its historical appearance than the cholera, it is well that the medical mind of Europe is on the alert to meet its approach with the most energetic measures; and should they fail, it will devolve upon us to lose no time in taking up the defensive in the most energetic manner.—*Medical and Surgical Reporter.*

Education in Germany.

The compulsory school laws of Prussia are frequently pointed to as models for similar laws, perhaps with the hope that by imitating her lower schools we can bring up our high schools to an equal rank with hers, and place our universities on a level with those which are producing the most finished scholars, the deepest thinkers, and the greatest investigators. We are likely to forget that the conditions are different, and especially that *nascitur, non fit*, is as true of a chemist as of a poet. The state of popular education in Germany is, however, a matter of interest, and is best illustrated by the following table, showing the percentage of unschooled men among the recruits from different German provinces:

	Per cent.		Per cent.
Prussia	3·19	Hesse	0·35
Bavaria	1·79	Mecklenburg	1·09
Saxony	0·23	Thuringia	1·42
Würtemberg	0·02	Alsace	3·45
Baden	0·22		

These figures seem to indicate a higher grade of intelligence and wider diffusion of knowledge among all classes, for recruits are from every class, than in Austria, although in the latter the figures are arranged so differently as to make any accurate comparison of Austria and Germany rather difficult and unsatisfactory.

Name of District.	Number of Common Schools.	Number of Inhabitants to each School.	Percentage of school children who attend.	Number of Normal Schools.
Bohemia	4,190	1 254	77	12
Bukowina	167	3,121	9	1
Dalmatia	241	1,864	12	2
Galacia	2,374	2,341	15	1
Carinthia	318	1,060	?	2
Carniola	234	1,187	48	2
Custrin	396	1,496	88	5
Moravia	1,866	1,082	78	5
Lower Austria	1,267	1,578	76	5
Upper Austria	506	1,455	83	2
Salzburg	155	982	85	1
Steiermark	690	1,657	59	3
Schlesia	433	1,208	77	4
Tyrol	1,926	457	?	6
Total	14,763			51

Over 3,000 teachers' positions are said to be vacant at the present time.

Bleaching Silk and Wool.

The methods now in use for bleaching silk, wool, and all animal fibers, such as sulphurous acid, alkalies, soap, etc., are so imperfect that Tessié du Motay has patented the following process, involving the use of binoxide of barium, with or without the addition of permanganates. The binoxide of barium is pulverized and subjected to the action of carbonic acid to remove any unconverted caustic baryta present. It is then thrown into boiling water, and after the bath has partially cooled the materials to be bleached are introduced and the bath kept at a temperature of 86° Fah. to 194° Fah. for two hours; silk from wild silkworms requiring a higher temperature than wool, goat's hair, and the like. It is then taken out and washed, put into an acid bath, then washed again. If necessary, the barium bath is repeated, as also the subsequent washings. If this second bath of binoxide of barium does not produce the requisite whiteness, it is introduced into a solution of permanganic acid or permanganate of magnesia before the last washing.

Binoxide of Barium, $Ba O_2$, is made by subjecting the oxide or caustic baryta, Ba O, to a stream of oxygen or common air at a high temperature. Its bleaching action is probably due to the formation of peroxide of hydrogen in solution in the bath.

An Alloy of Tin and Phosphorus.

At the Graupen Tin Works, in Bohemia, an alloy of tin and phosphorus is made containing the greatest possible quantity of phosphorus which the tin is able to retain without losing any of it upon repeated meltings. This compound, . . is neither entitled to the name of alloy nor is it a phosphide of tin, is employed in the manufacture of phosphorus-bronze. In the manufacture of phosphorus-bronze, by alloying copper with phosphorus-tin, no other precautions require to be observed than in the preparation of common bronze. As the different properties of phosphorus-bronze depend upon the proportions of phosphorus and of tin, two kinds of phosphorus-tin are prepared. No. 0 contains 5 per cent, and No. 1, 2½ per cent of phosphorus. These two kinds suffice to make the greater part of all the desired mixtures. For special purposes, the Graupen Works make to order phosphorus-tin with any desired quantity of phosphorus not exceeding 5 per cent, which is the highest possible limit. It is claimed that phosphorus-bronze may be manufactured by the use of this phosphorus-tin as much as 40 per cent cheaper than that now in the market, while it will only cost 8 per cent more than the ordinary tin and copper bronze.

No details are given of the method employed to make the phosphorus combine with tin, but the low melting point of tin as compared with that of copper would indicate that this would lead to the great saving promised above.

American Institute Exhibition.

The forty-sixth Exhibition of this Institute will open September 12, in this city, Parties having novelties which they intend to bring to public notice should at once address the General Superintendent for blanks and information. The medals, it is said, have been increased and special awards will be made upon a number of articles

American Inventions for New South Wales.

Writing from Sydney, under date of April 14, the *Times* correspondent thus refers to the supply of locomotives and carriages from America: Our appearance at Philadelphia has drawn the attention of American manufacturers to us in a most marked and unexpected degree. A country that, like New South Wales, is rolling in wealth must be a country that is able to buy, and a country that is able to buy is exactly the country that American manufacturers have been anxiously looking out for. Our representatives at Philadelphia have come back strongly impressed with the fact that there are many things that the Americans can supply us with advantage. Our Government has an offer from Messrs. Baldwin & Co. to furnish a locomotive engine for about £1,000 less than the cost of an English engine, and to leave the payment open until the engine has been thoroughly proved and approved. A Pullman's sleeping car and an ordinary passenger car have already been ordered, and American wheels, axles, rails, and brakes are strongly pressed on our acceptance. As our Government engineers are all of the English school, American novelties will have a hard battle to fight to win official acceptance, but the demand for economy in railway construction and working is so great that people and Parliament will press on the Minister for Public Works a fair trial for any American novelties that may seem to be suited to our wants. The English manufacturers, therefore, who have hitherto supplied us must look to their laurels.—*Capital and Labor.*

Man's Place in Nature.

Concerning man's true place in Nature, Haeckel says:

"Whatever part of the body we consider, we find upon the most exact examination that man is more nearly related to the highest apes than are the latter to the lowest apes. It would therefore be wholly forced and unnatural to regard man in the zoological system as constituting a distinct order, and thus to separate him from the true ape. Rather is the scientific zoologist compelled, whether it is agreeable to him or not, to rank man within the order of the true ape (Simiæ)."

To whatever minutiæ of detail the comparison is carried, we reach in every case the same result. Between man and the anthropoid apes there are the closest anatomical and physiological resemblances. In form and function, there is the most exact agreement between all the corresponding bones of the skeleton of each; the same arrangement and structure of the muscles, nerves and entire viscera, and of the spleen, liver and lungs—the latter being a matter of especial significance, for between the manner of breathing and the process of nutrition there is the closest relation.

The brain, also, is subject to the same laws of development, and differs only with regard to size. The minute structure of the skin, nails, and even the hair, is identical in character. Although man has lost the greater part of his hairy covering, as Darwin thinks, in consequence of sexual selection, yet the rudimentary hairs upon the body correspond, in many respects, to those of the anthropoids. The formation of the beard is the same in both cases; while the face and ears remain bare. Anthropoids and men become grayhaired in old age. But the most remarkable circumstance is that, upon the upper arm, the hairs are, in both cases, directed downward, and upon the lower arm upward; while in the case of the half-apes it is different, and not as soft as that of man and the anthropoids.

The eye, on account of its delicate structure, is peculiarly suitable for comparisons of this kind; and we find here the greatest similarity: even inflammation and green cataract occur. under the same circumstances, in both. See, also, Darwin upon this point.

There is no more striking proof that man and the anthropoid apes have the same anatomical and physiological nature, and require the same food, than the similarity of their blood. Under the microscope the blood corpuscles are identical in form and appearance; while those of the carnivora are clearly different from them.

It may now be interesting, in confirmation of what has been said, to refer to the family life, and, if one may so speak, to the mental and morallife of the anthropoids. Like man, the ape provides with exceeding care for its young, so that its parental affection has become proverbial. Connubial fidelity is a general and well known virtue. The mother ape leads its young to the water, and washes its face and hands in spite of its crying. Wounds are also washed out with water. The ape, when in distress, will weep like a human being, and in a manner that is said to be very affecting. Young apes manifest the same tendencies as human children. When domesticated, they are in youth docile and teachable, and also, at times, like all children, disobedient. In old age they often become morose and capricious. Most apes construct huts, or, at least, roofs, as a protection from the weather, and sleep in a kind of bed.

One peculiarity is alone common to them and man, and this is the habit of lying upon the back in sleep. In battle they defend themselves with their fists and long sticks; and, under otherwise like circumstances, they manifest like passions and emotions with man: as joy and sorrow, pain and envy, revenge and sympathy. In death, especially, the ape face assumes a peculiarly human-like and spiritual expression, and the sufferer is the object of as genuine compassion as exists in the case of man. It is also well known that apes bury their dead, laying the body in a secluded spot, and covering it with leaves. Regarding the domestic life of the ape, Darwin says, in his "Descent of Man" (vol. 1, p. 39):

"We see maternal affection manifested in the most trifling details. Thus Rengger observed an American monkey (a Cebus) carefully driving away the flies which plagued her infant; and Duvancel saw a Hylobates washing the faces of her young ones in a stream. So intense is the grief of female monkeys for the loss of their young, that it invariably caused the death of certain kinds kept under confinement by Brehm in North Africa. Orphan monkeys are always adopted, and carefully guarded by other monkeys, both males and females. One female baboon had so capacious a heart, that she not only adopted young monkeys of other species but stole young dogs and cats, which she continually carried about with her. Her kindness did not go so far, however, as to share her food with her adopted offspring; at which Brehm was surprised, as his monkeys divided everything quite fairly with their own young ones. An adopted kitten scratched the above-mentioned affectionate baboon, who certainly had a fine intellect, for she was much astonished at being scratched, and immediately examined the kitten's feet, and without more ado bit off the claws."

The number of characteristics possessed in common by man and the higher apes is, indeed, very great, and includes not only physical and emotional but even intellectual qualities.—*From Schlickeysen's "Fruit and Bread," translated by Dr. Holbrook.*

Special Notice.

Persons who have sent numbers of the SCIENTIFIC AMERICAN to this office, for the purpose of having them bound, will please call or send for them immediately.

Some of the volumes extend back to 1860, and as we need the room they occupy, we shall dispose of those not claimed within ten days from date of this paper.

MUNN & Co., 37 Park Row, New York.

DECISIONS OF THE COURTS.

United States Circuit Court.—District of New Jersey.

SHAWL STRAP PATENT.—GEORGE CROUCH *vs.* WILLIAM ROEMER.

[In equity.]

By Nixon, District Judge.

This is an action for an alleged infringement of complainant's letters patent No. 82,606, dated September 29, 1868, and reissued March 7, 1871, No. 4,289.

The subject-matter of the patent is in the reissue described to be a strap "to confine a shawl or similar article in a bundle," and termed a shawl-strap. The schedule attached to and forming a part of the said reissued patent states, that before the complainant's invention "straps had been used to confine a shawl or similar article in a bundle, and a leather cross-piece with loops at the ends, had extended from one strap to the other; and above and attached to this leather cross-piece was a handle. Thisleather cross-piece or connecting strap is liable to bend and allow the straps to be drawn toward each other by the handle in sustaining the weight. Hence the bundle is not kept in a proper shape and the handle is inconvenient to grasp."

The invention is then stated to consist "of a rigid cross-bar beneath the handle, combined with suspending straps, that are to be passed around the shawl or bundle, such straps passing through loops at the ends of the handle."

No question can be made but that the shawl straps manufactured and sold by the defendant are an infringement of the complainant's reissue. They consist of a metallic cross-bar, with slots at the ends for the reception of the straps, and which also connect the ends of the handle.

Several defences are set up in the answer, but the only one necessary to consider is the first, to wit: The want of noveity and prior public use.

I had occasion, heretofore, to inquire into the validity of the complainant's patent, in a controversy between the same complainant, and Speer *et al.*, reported in VI. Off. Gaz. 1874, in which, as in this case the principal defence turned upon the novelty of the invention. A prior public use was alleged and attempted to be proved. I there said and now repeat "that the patent is *prima facie* evidence that the patentee was the original and first inventor, and that anyone who controverts this assumes the burden of proof and undertakes to show affirmatively that there was a prior knowledge and use of the alleged invention under such circumstances, as to give to the public the right of its continued use against the patentee."

The defence in this case has brought out many facts in regard to the public use of the rigid cross-bar in shawl straps anterior to the date of the complainant's patent, which were not developed in the former suit. There is no evidence which in my judgment affects the honesty of the complainant's claim, or which creates any doubt that he really believed himself to be the orig al and first inventor, but nevertheless I am constrained to the conclusion, after a most careful examination of the whole testimony, that the proofs show with reasonable certainty that he has been anticipated in the invention and that his patent is void, in consequence of the prior knowledge and public use, and the bill must be therefore dismissed with costs.

[*E. B. Barnum*, for complainant.
Arthur v. Briesen, for defendant.]

NEW BOOKS AND PUBLICATIONS.

THE ECONOMIC THEORY OF THE LOCATION OF RAILWAYS. By Arthur M. Wellington, C.E. Price $2.00. New York city: Office of the Railroad Gazette, 73 Broadway.

The author of this book is thoroughly conversant with his subject, and his statement that the book has gradually grown from a few notes into a volume may be accepted as an explanation of the somewhat fragmentary character of the work. He asserts that "all our railways are uneconomically located," and "in many cases these errors are shockingly evident." If these statements are true, he is right in stating that "there is something almost pitiful in the waste of human labor enforced by such costly blundering." He considers that other countries have made lamentable blunders in locating their railroads, so that the suffering stockholders of American lines may take comfort from the thought that others are or may be as badly off.

FRUIT AND BREAD. A Scientific Diet. By Gustav Schlickeysen. Translated from the German by M. L. Holbrook, M.D. With an Appendix. Illustrated. New York city: M. L. Holbrook & Co.

The author and translator of this little treatise are firm believers in vegetarianism, and present in a highly attractive form the main arguments which sustain them in their position. The subject is most carefully and systematically treated, and although the conclusions at which the author arrives are greatly at variance with modern belief and practice, the book is nevertheless entitled to proper and respectful consideration. Illustrations are given of the teeth and stomachs of various animals, and these are compared with the similar organs existing in man, so exhibiting in a clear and satisfactory manner the pe fect adaptedness of the latter to a purely vegetable regimen, which is certainly somethingmore than merely accidental. Altogether the book is well worthy of perusal by others than those more immediately interested in the question of diet.

THEORETICAL NAVAL ARCHITECTURE: a Treatise on the Calculations involved in Naval Design. By Samuel J. P. Thearle, F.R.S.N.A., etc. Two Volumes; Text and Plates. New York city: G. P. Putnam's Sons.

This book is designed to meet the requirements of both those who possess but a moderate amount of mathematical knowledge as well as of those who are much further advanced. Numerous formulæ and ules clearly stated will enable the former to perform without much difficulty the ordinary routine of the draughting office, while ample opportunity is afforded the latter to trace back the processes from which these rules have gone forth. The book is divided into six parts. Part I. embraces the calculations relating to the forms and dimensions of ships. II. those relating to the weights and centers of gravity of ships. Part III. refers to the strength of ships. IV. and V. to their propulsion by sails and by steam engines; while Pa t VI. treats of the calculations relating to steering. An excellent book of plates and tables accompanies the text.

KEMLO'S WATCH REPAIRER'S HANDBOOK: being a complete guide to the young beginner in taking apart, putting together, and thoroughly cleaning the English lever and other foreign watches, and all American watches. By F. Kemlo, Practical Watchmaker. With Illustrations. Price $1.25. Philadelphia, Pa.: Henry Carey Baird & Co.

This workwill prove of great value to all in whom the curiousmechanism of clocks and watches has excited more than a passing interest. None but skilledfollowers of the art have been allowed to contribute to its pages, so that the practical worth of the information given can be fully relied upon. A concise history of timekeepers is followed by a clear and exhaustive description of the English lever watch, which in turn is followed by articles on cleaning, putting together, and the conditions necessary to produce a good English watch. American watches deservedly engage considerable attention. Papers on repairing watches, cleaning and repairing clocks, and a short description of the necessarytools complete the book.

RECENT PROGRESS IN SANITARY SCIENCE. By A. R. Leeds. Salem, Mass.: Printed at the Salem Press.

This isa reprint of a paper read at the Lyceum of Natural History, October 9, 1876, by the well known Professor of Chemistry at the Stevens Institute.

WILLIAMS' TOURIST'S MAP AND GUIDE TO COLORADO AND THE SAN JUAN MINES. Price 50 cents each. New York city: H. T. Williams, 46 Beekman street.

Two well edited publications, deserving the attention of travelers and emigrants.

Inventions Patented in England by Americans.

June 7 to June 15, 1877, inclusive.

BOOTS AND SHOES.—Mellen Bray, Newton, Mass.
ELECTRO-MAGNETIC MOTOR.—W. W. Gary, Washington, D. C.
FURNACES.—J. J. Storer, New York city.
GAS.—M. H. Strong, Brooklyn, N. Y.
GAS APPARATUS.—D. C. Smith, East Northwood, N. H.
GAS MACHINES.—T. F. Rowland, Greenpoint, N. Y.
MINERAL WOOL APPARATUS.—A. D. Elbers, Hoboken, N. J.
MOTIVE POWER.—W. G. Smith *et al.*, New York city.
POWER LOOMS.—James Long, Philadelphia, Pa.
PULVERIZING MACHINES.—J. J. Storer, New York city.
PUMP.—A. F. Eells *et al.*, Boston, Mass.
REFRIGERATING APPARATUS.—B. J. B. Mills, Lexington, Ky.
SEWING MACHINES.—C. H. Warner, Sturbridge, Mass.
SHEET METAL UTENSILS.—F. G. Niedringhaus, St. Louis, Mo.
VALVE GEAR.—E. Cope *et al.*, Hamilton, Ohio.

Recent American and Foreign Patents.

Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class WOOD ENGRAVINGS of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

NEW AGRICULTURAL INVENTIONS.

IMPROVED HAY ELEVATOR.

Eugene L. Church, Walworth, Wis.—This is a hay elevator and carrier of simple and effective construction; and it consists essentially of a traveling carriage locking, by a tilting catch, on a fixed stop block of the track, from which it is released by the action of the bail of the sheave frame of the hay fork on a pivoted grappling hook, the sheave being held in suspended position by the joint action of a fixed hook, of the pivoted hook, and of the tilting catch. A track beam, which is suspended from the rafters of a barn or other building by means of eyebolts passing through the center of the track beam. A carriage runs along the track beam by a pair of flanged wheels, at each end of which the wheels of one pair are set at such distance from each other that they clear readily the suspension bolts as they pass along the same. A hoisting rope is attached, in the customary manner, to a fixed point at one end of carriage, and passed then through the sheave frame of the hay fork, and over a pulley of the carriage, and through a sheave at the end of track beam, and down to the ground, where a horse is hitched to its free end.

IMPROVED CORN HARVESTER.

Bennett Osgood, Lenox, Iowa.—This invention is an improved machine for cutting up the corn, removing the ears from the stalks, and cutting the stalks into pieces, and which may be adjusted to cut up the corn and shock it. As the stalks are carried back by chains, pins or hooks on barc tear open the husks of the ears; and the bars, in connection with rollers, break the ears from the stalks. The ears, when broken off, drop through an opening in the platform into an elevator, up which they are carried, and are discharged into a wagon drawn at the side of the machine. The box of the elevator is supported from the frame of the machine, and its carrier is driven from a shaft by an endless band. The stalks are carried back by endless chains, and allowed to drop from the rear end of the platform upon the brackets attached to the rear bar of the frame. As they fall upon the brackets they are cut into three pieces by two knives, which work in slots in the brackets, and to the upper part of which are pivoted the upper ends of two bars. The lower ends of these bars are pivoted to a crank formed upon the shaft, which revolves in bearings attached to the rear bar of the frame.

IMPROVED SULKY HARROW.

George M. Furman, Laclede, Mo.—This is an improved riding harrow, so constructed that it may be readily raised from the round, by the driver from his seat, to clear it of rubbish, to pass obstructions, and to pass from place to place, to cut up the ground and cover the seed thoroughly, and be used for cultivating small grain and plants.

IMPROVED HARROW.

Hans Iver Lund, Charlotte, Iowa.—The object of this invention is to furnish an iron harrow which shall be light, strong, and durable, of less draft than an ordinary harrow, of less size, inexpensive in manufacture, and effective in operation, breaking up the lumps thoroughly, and stirring up the soil evenly. The harrow is designed to be made in three sections, all exactly alike, one, two, or three of which may be used at a time.

IMPROVED COMBINED COTTON SCRAPER AND CULTIVATOR.

Malachiah Roby, Kosciusko, Miss.—This machine is so constructed as to bar off and dirt or cultivate cotton plants at one o eration; and the invention relates to the construction and arrangement of a center or main beam, to the forward end of which the draft is attached. To the beam, a little in the rear of its forward end, is attached the middle part of a crossbar, in which are formed a number of holes to receive the hooks or clevises by which the forward ends of side beams are secured to said crossbar. To the rear end of the main beam is attached the middle part of a crossbar, to which the rear ends of the side beams are secured by a bow and yoke passed around them diagonally, and which are tightened, when adjusted in place, by nuts screwe updon the ends of the bows. Bands are paseds