

diagonally upward through the skull, on top of which it is clinched flat. Cotton batting is then wound about the wire between skull and body, until sufficient thickness is obtained to fill the skin of the neck. The position of the various parts at this point is represented in Fig. 4. Painting the inside of the skin with arsenical soap follows, and then the skin is drawn back so as to envelope the false body, and a needle and thread is thrust through the nostrils to make a loop for convenience in handling.

The finest pair of forceps is employed to pull the eyelid skin into place, to arrange the feathers, and to pull up the cotton in the orbits so as to stuff the cavities out plumply. More cotton is next pushed down the throat until the same is entirely filled (Fig. 5). Two pieces of wire—quite stout for large bird—are then sharpened at one extremity. Taking the wire in one hand and guiding it with the other, the operator shoves it into the leg, from the ball of the foot up alongside the thigh bone, the skin being turned back for the

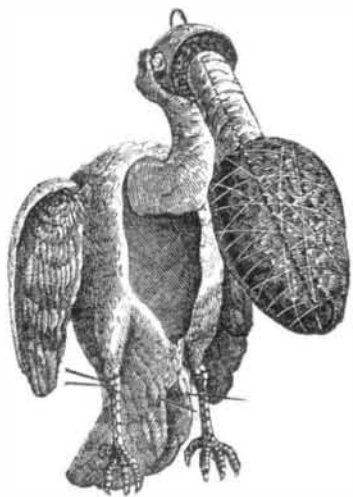


Fig. 4.—MODE OF ATTACHING THE FALSE BODY.

purpose. Cotton is then wound about both wire and bone, in order to fill the thigh out naturally, and the same process is repeated for the other side. The ends of the wire below are left protruding in order to support the bird on a perch, if such be desired. The upper ends are pushed clean through the artificial body, from below up, and clinched on the upper side. This secures the legs, which are afterwards bent in natural position (Fig. 6).

The bird can now be set up, that is, the wires stretching out below the claws can be wound about a perch or pushed through holes in a board and clinched on the under side. In the latter case, it will be necessary to spread the claws and fasten them with pins. For small birds, the cut in the breast need not be sewn up; a chicken or larger fowl will require



Fig. 5.—FILLING THE THROAT.

a few stitches to hold the edges together. If the tail feathers are to be spread, a wire is thrust across the body and through each feather, holding all in the proper position. The wings are then gathered closely in to the body, and two wires, one from each side, are pushed in diagonally from up, down, and through the skin of the second joint (Fig. 7). The wings are thus held, and the wires, as well as that through the tail, are left protruding for an inch or more. A touch of glue within

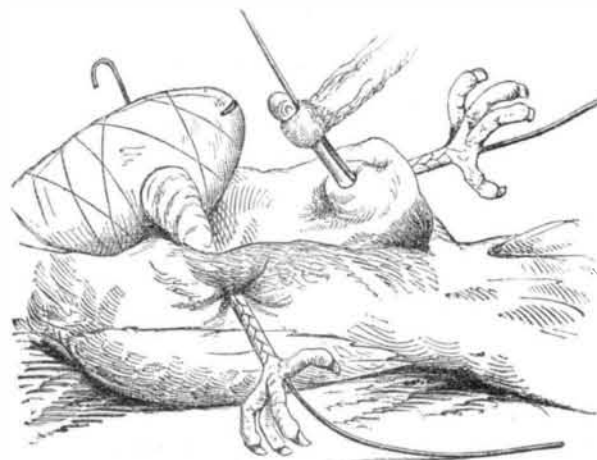


Fig. 6.—STUFFING THE LEGS.

the eyelids prepares the latter for the eyes. These must be purchased from taxidermists, but for small birds common black beads will answer. If plain glass beads can be obtained, by the aid of a little paint the student can easily imitate the eye of a chicken. After the eyes are inserted, a sharp needle is used to pull the lids around them and into place.

The operator must now, with a fine pair of forceps, carefully adjust the feathers, smoothing them down with a large camel's hair brush. This done, thread must be wound over the body very loosely, beginning at the head, and continuing until all the feathers are securely bound. The bird is then left to dry for a day or two, when the thread is removed, the ends of wire cut off close to the body, and the work is complete.

Stuffing animals requires less delicacy and care to avoid injuring the skin than with birds, but necessitates a closer knowledge of the form and natural position. The mode of skinning and stuffing is the same, except that the neck is cut down, as the head cannot, of course, be drawn through. This last is also the case with ducks, woodpeckers, and other slender-necked birds. In preparing deer's heads and antlers, the skull is best taken in, as it can be secured on a piece of wood, on which the neck can be built up. In skinning the head, the incision should be made on the back of the neck, and care should be taken completely to fill all cavities of the skull.

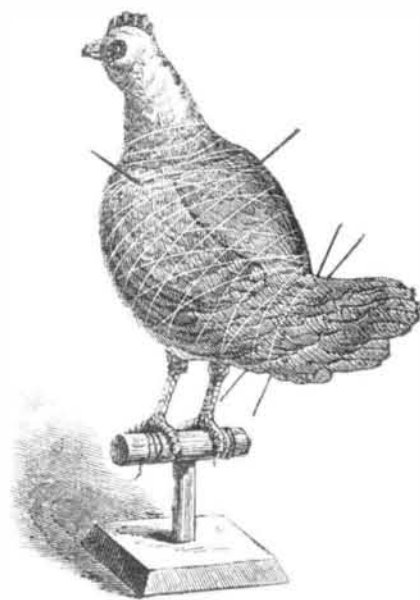


Fig. 7.—THE BIRD PREPARED FOR DRYING.

We should advise amateurs in this interesting art to endeavor to give an aspect of life to their productions, by grouping them or placing them in odd though natural positions. For instance, a chicken can be easily placed as in the act of picking up food or crowing—any position will be better than stiffly standing erect. Similarly animals can be represented attacking prey, fighting, or playing. A very fine group, now in the Central Park Museum, this city, representing an Arab mounted on a camel and attacked by lions, will exemplify our meaning. All the animals in this group are superbly prepared and placed, though, of course, such a work requires a skilled naturalist as well as taxidermist.

We are indebted to Messrs. Ulrich and Riedel, taxidermists, of No. 16 North William street, this city, for the practical suggestions above given.

Sir Charles Lyell.

We regret to announce the death of Sir Charles Lyell, a veteran scientist whose labors in the field of geology have gained for him universal renown. He was a native of Scotland, and was born in 1797; and he graduated at Exeter College, Oxford, where Dr. Buckland (afterward Dean of Westminster, and father of our contemporary, Mr. Frank Buckland) was Professor of Geology. The personal influence of Dr. Buckland, one of the most successful teachers who ever imparted a charm to an abstruse science, probably turned Lyell's attention to geology, he having commenced, on leaving the university, the study of law. In his twenty-ninth year he published his first paper, "On the Recent Formations in Forfarshire, Dorsetshire, and Hampshire." His fame as a writer was rapidly achieved, the scientific world at once recognizing his patient and laborious research, and his masterly and lucid method of exposition. His "Elements of Geology" and "The Principles of Geology" are his two most valuable works, and are known as accurate and exhaustive text books; while his more recent volume, "The Antiquity of Man," is perhaps the most important contribution yet made to that branch which connects his favorite science with the whole problem of the Universe and its origin.

Sir Charles traveled much in this country and Canada in 1841, and a very interesting book on our geology was published by him soon afterwards, called "Travels in North America," a second volume being the result of subsequent investigations made in 1845. During his first visit, he gave a course of lectures on geology in Boston, Mass. He served twice as President of the Geological Society of England, and departed this life full of honors and distinctions bestowed upon him by learned societies in all parts of the world.

New York Science and Art Association.

This institution, at its last regular meeting, elected for President, S. Irenæus Prime, D. D.; Vice Presidents, E. P. Rogers, D. D., Howard Crosby, LL. D., Professor D. G. Eaton, Henry Day, W. P. Titus.

Its course of lectures this winter has been very brilliant, and every one of them attended by crowded assemblies. The Association gives the lectures freely to the public, its only object being the diffusion of useful knowledge. To this end it invites learned and able men to discourse to the people on topics of commanding interest, and the multitudes desirous of being instructed show that these efforts are appreciated.

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VOLUME XXXII., No 11. [NEW SERIES.] Thirtieth Year.

NEW YORK, SATURDAY, MARCH 13, 1875.

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THE NEW RULE OF THE PATENT OFFICE.

Contrary to the uniform and long-established practice of the Office, the Commissioner has recently promulgated a rule that hereafter no rejected and abandoned application shall be a competent reference on which to reject an application for a patent. A person may now hunt among the models of rejected applications, to which free access is allowed; and if he finds anything that has never been patented, or described in a printed publication, or gone into public use, he may—if he can bring his conscience to the sticking point for making the necessary affidavit—obtain a patent therefor which will be good and valid against all the world for seventeen years. It is true that an affirmation, showing that he had derived his knowledge of the invention in the manner just supposed, would defeat his action for infringement; but such proof can rarely be obtained.

The patent law denies a patent unless, among other requirements, the thing patented was "not known or used by others in this country" prior to its invention by the applicant; and after the patent is obtained, it may be defeated by showing that the patentee "was not the original and first inventor or discoverer of any material and substantial part of the thing patented." A quarter of a century ago, Judge Cranch had decided that an invention was completed and reduced to practice when, by means of models, drawings, and other descriptions, it was set forth in such terms that a person skilled in that particular art could reproduce the invention as described. When this was done, therefore, in an application for a patent, the invention was known in this country, and no other person could afterwards be the original and first inventor thereof.

The rule embodied in this decision has governed the action of the Patent Office ever since, until the recent change. A rejected application was therefore regarded as just as good a reference on which to reject a new application as a patent itself would have been. The importance of preserving and arranging the files, models, and drawings of all rejected applications was therefore manifest.

The business of the Office has grown up chiefly under the rule above referred to, and the education of the practitioners therein has been shaped accordingly. The change of the rule, without any corresponding change of the statute, natur-

ally created no little surprise and aroused a feeling of disapproval in our minds.

But upon reviewing the action of the Federal courts on this subject for several years past, we find that they have been gradually drifting away from the rule laid down by Judge Cranch, and the views of the inferior courts in this respect have finally been sanctioned and confirmed by those of the Supreme Court of the United States. We are far from being the advocates of what Mr. Jefferson used to denominate judge-made laws. We believe that the proper duty of the judiciary is to give effect to the statute, according to its fair intent and meaning—leaving to the legislative department the duty of correcting whatever may be thought amiss in the law as it exists. When the courts overstep this rule and undertake, by construction, to change the statute into what they think it should be, they launch forth upon a sea of uncertainty, and find themselves the authors of unnecessary difficulties for which there is no adequate compensation. Different judges will have different views of expediency. No one can tell into what shape prevailing doubts will finally crystallize. The most intelligent members of the profession find themselves incapable of giving reliable opinions, and property in patents becomes to a needless extent a gambling contrivance. To us it has always seemed as though the ruling of Judge Cranch, above referred to, was in substantial accordance with the statute, and that, if thought erroneous, an act of Congress was the proper remedy, especially after it had been so long recognized and acquiesced in by the Office.

But the ultimate decision of the courts is the rule to be observed in administering these and all other laws. Whatever may be our individual opinions, the great court of last resort must be regarded as being endowed with judicial infallibility so far as our own subsequent actions are concerned. The rule of the Patent Office should be made to harmonize therewith, and the Commissioner was bound by his duty to act accordingly. This he seems to have done by the establishment of the rule we have been considering, and to which the conduct of all interested parties must be made to conform.

This rule will to a great extent dispense with the necessity of preserving the files, models, or drawings of abandoned applications, or at all events of leaving them open to public inspection. Until the applications are abandoned, the previous rules of the Office preserved them in secret. After their abandonment, they can hardly be needed for any commendable purpose, and perhaps their preservation might be discontinued altogether, to the great relief and convenience of the Office. With this matter, however, we do not intend to meddle at present.

PISCICULTURAL PROGRESS.

That fish culture is evidently destined to become as much a settled pursuit as stock raising, we believe its past progress, as well as its prospects for the future, leaves no reasonable doubt. The success which has attended the efforts of the public-spirited gentlemen, who, for several years, have devoted their time and studies to the industry, is certainly very flattering, and an abundance of the finest and most delicate of game fish, in almost every stream and brook suitable for their development, appears now to be dependent mainly on the degree to which individuals will interest themselves in procuring the necessary spawn. This, through the new transporting apparatus, which we illustrated last week, is reduced to so simple and easy a proceeding, that the means for populating otherwise waste waters is to be obtained merely for the asking, or at most attended with an expense intrinsically trivial, and entirely inconsiderable in comparison with the benefits to be gained.

We took occasion recently to speak of the landlocked salmon as an excellent fish for stocking streams. There is another species which is worthy of equal commendation, and which is, besides, especially suitable for streams preserved for sporting purposes. We allude to the grayling, the natural habitat of which is in streams in Michigan, flowing into the Lake. This fish has, during the past year, been successfully hatched in New York State. It is not so good eating as trout, but is not at all inferior as a sporting fish. It is easily kept in good condition, and does not require so much food as the trout, and it is in season while the trout is not. The grayling spawns in April and the trout in November.

Mr. Seth Green, however, adheres to the belief that trout is the only fish with which to restock worn-out streams, and he states that in no event can grayling and trout be reared in the same waters.

Mr. R. B. Roosevelt, President of the American Fish Culturists' Association, at the recent annual meeting of that body, briefly recounted progress during the past year, in his opening address. Shad have been put on the Pacific coast, and captured in Sacramento river where they have never before been taken. So, also, bodies of water previously destitute of fish have been well filled with salmon trout, white fish, and various varieties of bass. Experiments are in progress with relation to the sturgeon, and it is believed that this valuable and large fish may be successfully artificially hatched

NATURE'S EFFORTS.

"If Nature put not forth her power, about the opening of the flower, who is it that could live an hour?"

So argues one of Tennyson's "Two Voices," anent the "stirring of the blood" which makes youth ambitious of great deeds. As poetry it is admirable, it lying in the province of poetry to personify all things, Nature not excepted. As prose, it would be less commendable; as Science, utterly intolerable. Yet men who think themselves scientific not unfrequently indulge in expressions in the same strain, which,

if they mean anything, mean that the aggregate of phenomena to which we apply the term Nature is capable of willing and choosing, and of adapting special means to special ends—a palpable absurdity. Curiously, too, such language is often indulged in by those who deny the implied divinity of Nature, and recognize no controlling intelligence behind the veil.

An instance occurred the other evening: A more than usually thoughtful physician was speaking about the large family of small children, left orphans by a consumptive patient just dead; he said: "That is the usual way; those least worthy of perpetuation—those who have least to transmit to their offspring—multiply the most. Men know that they are slowly dying of an incurable disease, and that their children are almost certain to inherit ill balanced bodies and untimely death; yet they multiply to the last, just as plants when struggling under unfavorable conditions invariably run to seed. It seems," he continued, "as though Nature, conscious of impending defeat, threw all her available force in the direction of seed, to increase the chances of perpetuating the stock."

We have little faith in the theory which ascribes infinite perfection to Nature; in most cases, things are as they are simply because they could not be much worse and exist; still we should shrink from an interpretation of the facts of life imputing, like our friend's theory, infinite foolishness to Nature. The under dog in the fight may be an object of pity. From a human or humane point of view, he may be a proper subject for assistance. But to expect Nature to interfere in his behalf would be as unreasonable as to expect her to make a special effort now and then to help water to run up hill. If the fittest survive—and that is the natural order—the least fit must go down and stay down.

But do not the frailer sort seem to multiply excessively, as our medical friend asserted? To a great extent they do; but that does not necessitate his interpretation of the fact. That simply involves the same fallacy which a prominent sanitarian exemplified in his explanation of the fact that, in the poorer districts of great cities and in other places, as in rural Russia, where ignorance and poverty abound, the birth rate is relatively excessive. It shows an effort of Nature, he said, to make up for the unsanitary condition of such places, and the consequent waste of life in them: in other words, the death rate being excessive, the birth rate has to be correspondingly great to enable Nature to keep her seed up in the matter of population. Of the folly which Nature would exhibit in thus choosing the worst possible ground for fighting her assumed battle with death, he said nothing.

It was easy for a more logical and sensible observer to turn the tables entirely by calling attention to the fact that the excessive death rate, observed under such conditions, is the consequence and not the cause of the excessive birth rate. A high birth rate implies rapid child-bearing, exhausted mothers, ill-cared-for children, and many deaths in infancy—the invariable source of a relatively large death rate; and the same unthrift and ignorance, which result in poverty and overcrowding in unwholesome tenements, are very apt to manifest themselves also in improvident child-bearing with its fatal consequences.

As in this, so in all other similar cases, the moment men begin to indulge in the seductive habit of attributing intention, purpose, design, or what not, to the drift of phenomena, that moment they turn their eyes from their real connection and delude themselves with vain imaginings.

RUBBER TIPPED PENCILS.

On July 28d, 1867, James B. Blair obtained a patent for a rubber head for lead pencils, claiming, as a new article of manufacture, "an elastic erasible pencil head." The patent was acquired by "The Rubber Tip Pencil Company," who pretended that the patent gave to them the exclusive right to make rubber heads for lead pencils and under threat of legal proceedings against all who proposed to make such articles, they prevented competition, obtained a large business, and soon grew wealthy. A few stationers, however, ventured to dispute the broad claims of the Tip Company, and a suit finally came to the United States Circuit Court for trial. The defendants alleged that the rubber head claimed by the plaintiffs was simply a bit of rubber with a hole in it, on which a patent could not be sustained. The court took the same view, and decided that the patent was invalid. An appeal was then taken to the United States Supreme Court, as will be seen from our report on another page. The Supreme Court affirms the previous decision, thus completely rubbing out the absurd claims of the erasible pencil head Tip Company.

WASTE LAND AND FOREST CULTURE.

After a century spent in spoiling our woodlands, we are, as a people, slowly awakening to the fact that the chief end of man is not to cut down trees. We are beginning to learn also that, so far from being incompatible with forests, permanent civilization is impossible without them, that the tree slayer's ambition to bring the whole land under tillage would result, if successful, in making tillage a waste of labor through climatic disturbances. Alternations of drouth and deluge, blighting heats and blasting colds, have ever been the penalty for general forest destruction; and many a land once fertile is now a desert for this cause alone. Indeed woodlands are to climate what the balance wheel is to machinery, the great conservator and regulator, without which all other conditions are wasted.

There is probably not a periodical in the country which has not had more or less to say about the waste of our woodlands. The general opinion seems to be that we can recover

the advantages we have squandered only by the creation of great forest reserves, with a general commission of forestry to see to their protection. Had we a strongly centralized government, it might be easy enough to carry out such a scheme successfully. As things are, we very much doubt its feasibility, except perhaps in regions like the Adirondack Wilderness, where the soil is unfit for anything else, and where such precautions are very little needed. Within our personal recollection, large areas in Clinton and Essex counties have been twice stripped of timber by lumbermen and charcoal burners; yet to-day the same hills are covered with a thrifty third growth. Where the difficulties of transportation are so great, there is little danger that the natural wood growth will fail to keep pace with the wood cutters. It is only where land has been cleared and brought under tillage, or laid waste by repeated fires, that special effort is required for the restoration of the forests. The fears that have been expressed in regard to such irreclaimable wildernesses as those of Northern New York are therefore quite gratuitous.

Besides, it is a general distribution of woodlands, not local forests, however extensive, that the country chiefly needs. The farms of Central New York are benefited by groves in their immediate neighborhood far more than by the forests of Essex and Franklin counties. Still more do the farmers of the West require frequent spaces of woodland, to break the storms of the prairies, to regulate the rainfall and temper the climate, and to meet the local demand for wood. Great forest reserves in Michigan or Wisconsin would help them comparatively little. They should look rather to local measures for the cultivation of trees; and the most that they should ask of government is a law authorizing townships to compel the gradual conversion of unused land into woodland. In every part of the country, there are tracts of land held by individuals or by corporations for speculative purposes. Very largely such landholders are non-residents, who count on being enriched through other men's efforts. While A, B, and C are clearing their farms and establishing schools, churches, and other conditions of civilization, a market is made for the lands of D, who contributes nothing to the advancement of the new society, yet gains in the end perhaps more than the actual settlers. It would be no injustice to him to make him do his part towards the building-up of the community through whose labor he is made rich; and there is no way in which this could be more surely accomplished than by compelling him to plant a portion, say one tenth, of his idle land to trees every year. There would be no injustice in this, for the growth of the timber would add year by year to the value of his investment, while the resident community would be benefited by securing a local supply of fuel and lumber with all the climatic advantages of abundant woodland. The settler can ill afford to wait twenty or fifty years for the maturing of a crop; the speculator on the other hand, who is simply holding the land for its "unearned increment," can well afford to have a legitimate increment in timber growth slowly swelling the value of his investment. The necessity of planting might limit his purchases, but it would scarcely limit his profits in the end.

In all the older States, there are vast areas of waste land owned by railway companies and other corporations, much of it of little value for plow land or pasturage, yet well suited for the growth of wood. The railway companies are in the habit of sending to the remotest parts of the country for ties, when, by the exercise of a little forethought, they might grow them more cheaply at home. It would be to their advantage in the end, as well as a benefit to the community at large, if they were compelled by law to do so.

So too in mining regions, as in Pennsylvania, where miles and miles of mountainous country have been stripped of timber and scourged by fire until nothing remains but blackness and desolation. With their abundant riches underground, the great coal companies can afford to neglect the land above; but the State at large cannot long afford to let them do it. Such waste of woodland has brought ruin to every country that has permitted it; and if the owners of the soil will not restore its natural covering through enlightened self-interest, the inhabitants of the State will have to interfere in self-defence.

Fall of a Meteoric Stone.

The *Times* has already made mention of a brilliant meteor that was seen at Iowa City and other points in Central Iowa, on the evening of February 12, at half past ten o'clock. Its course was from southeast toward the northwest. It was apparently about half the diameter of the moon, and accompanied by a beautiful train. The color and vividness were about like that of molten iron. While in view it was seen to separate into many fragments, and, after about three minutes, the reports of three explosions were distinctly heard. One of the fragments seems to have fallen about three miles south of the village of West Liberty. An observer near that point says: "For fully a minute the heavens were lighted by the fierce glare of the swiftly descending fire ball; and when it struck, the earth shook as from an earthquake for miles around, and the noise of the concussion was heard by the people of Grinnell, 95 miles away. The fiery ball, striking *terra firma* in a large open field, frightened residents in the vicinity half out of their wits. It sank fifteen feet into the ground, and left a hole of that depth and ten feet in diameter. For hours it continued to spit forth flame, crackle, sputter, smoke, and occasionally discharge loud cannon-like reports, to the infinite terror of the people in that vicinity. None dared approach while this miniature volcano continued in action; but with the cessation of life, hundreds gathered around to investigate the wonder."—*Dubuque Times*, February 19.