

Correspondence.

A Needed Patent Office Reform.

To the Editor of the SCIENTIFIC AMERICAN :

In your valued issue of the second instant you present an article on the "Proposed Amendments to Our Patent Laws."

In addition to the propositions of the National Association of Manufacturers of America, I desire to call your attention to an inconsistency in the present working of the Patent Office which forms a sufficient grievance for another amendment.

The injustice (and it is nothing less) to which I refer is the unnecessary time and delay consumed in getting an application for a patent through the Patent Office.

With a surplus of \$300,000 accumulated during the past year, and a total surplus to its credit of more than \$5,000,000, it would seem there is no excuse for submitting inventors to such long delays as is now the case in the examination of applications; especially, on the ground that the office is overworked, or that the force of examiners is insufficient to cope with the vast amount of business pouring into that office each day.

If more examiners are necessary to the proper dispatch of business, there is nothing to prevent the doubling or trebling of the present force, in the light of the resources at hand.

The writer has a number of applications for patents now before the Patent Office, and when he is told respecting one set of papers that this particular application "will come up for examination in about four months from the date of filing," it seems an absurd proposition for a government institution to make, which exists for and is backed and supported by an army of inventors, whose fees have enabled the office to pile up an unheard of surplus over and above its expenses.

Four months before one's application can reach an official examination! This is almost an insult to the inventive age, and certainly leads to the conclusion that there is large room for a grand reformation along this line, and that it is high time some action were taken looking to the correction of this evil and a betterment of this branch of our patent service.

In patent practice the great desideratum is the utmost dispatch consistent with absolute accuracy, and there is no reason why the United States Patent Office should not be so skillfully equipped as to be able to pass on each and every application in at least two weeks after the date of filing thereof.

To compel an inventor to wait four months or more, before he can know what the outcome of his application is to be, serves to tie his hands, and prevent him from marketing what might prove a valuable invention, and at the same time keeps out of his possession funds which are absolutely necessary to his work and welfare.

Were every inventor a manufacturer, then the time consumed in passing upon these applications would not so materially affect him, for he could manufacture his invention with the usual "Patent applied for" stamped thereon, and patiently wait the pleasure of the Patent Office; but when, as is now the case, inventors are dependent upon manufacturers, it is impossible to dispose of a patent which the Patent Office has not as yet granted; and as money is what the inventor needs, he is unjustly compelled to wait until the insufficient force of the Patent Office reaches and passes upon his application.

Unless some reform is inaugurated to correct this grievance, what is to be expected of the future, when the accumulation of applications at this date has put the examiners four months or more behind in their work? How does the office expect to cope with inventive expansion, if they find themselves handicapped with work at this stage? And why is that \$5,000,000 surplus lying idle, when it might be expended in supporting an increased force of examiners, and thus facilitate the work of examination?

If the National Association of Manufacturers of America are seeking amendments to the patent laws of this country, they would do well to incorporate the above in their repertoire, and thus bring about a badly needed reform.

WILLIAM E. HEATH.

Baltimore, October 9, 1897.

Electrical Show—Madison Square Garden Selected for the Second Exhibition.

Another electrical show has been planned for New York. Indications are it will be larger than the first, and for that reason the management lately signed a lease for Madison Square Garden for the month of May, 1898.

The exhibition company was incorporated in Albany last week. The officers are: C. O. Baker, Jr., president; F. W. Roebing, vice president; George F. Porter, secretary and treasurer, who, with L. F. Requa, C. H. Lieb, H. H. Harrison and J. W. Godfrey, compose the board of directors. Mr. M. Nathan, the general superintendent of the last show, will have the management of this.

The new electrical inventions and improvements developed since the last show, and the interest and co-

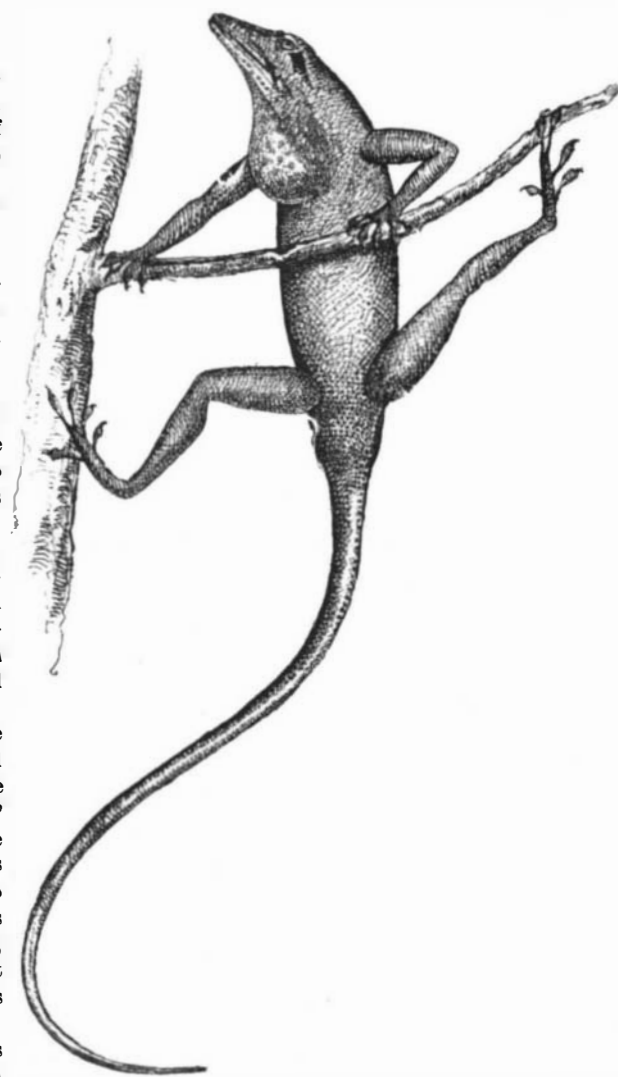
operation of many manufacturers already assured, will count for much toward making this a more complete demonstration of all the applications of electricity and its branches than was possible in the first exhibition in 1896.

THE COLOR CHANGES IN LIZARDS.

BY C. F. HOLDER, PASADENA, CAL.

The chameleon of eastern countries has attained a world-wide reputation for its wonderful faculty of changing color. In America we have a lizard, shown in the accompanying illustration, which is, if not so remarkable, one of the most interesting of this group of animals. *Anolis principalis* is best and most familiarly known in Florida and some of the Southern States, where it darts about among the vines and other vegetation, mimicking the dark green verdure and presenting a really wonderful illustration of this singular phase of nature.

At one time I possessed several specimens of the anolis, and endeavored, with poor success, to introduce these little animals into Southern California, hoping that they would adapt themselves to the conditions which prevail here, but my lizards simply became pets and apparently preferred the house, where they were provided with flies and other delicacies. These little creatures were about five inches in length, of a general dark green hue shading to gray, assimilating the various objects upon which they rested slowly but



AMERICAN CHAMELEON (*ANOLIS PRINCIPALIS*).

very decidedly. I arranged several little corrals, one with a white base, another with a gray, another with a green, and changed the occupants about. In ten or fifteen minutes they very materially would adapt themselves to the new tint, though they never became white, the change then being merely a fading out of all lines, leaving the body a faint gray. At night they became a beautiful green, which may be considered their normal color. The changes made in confinement I am confident were not so rapid as those when the lizards were in their native Florida, where moisture and hot days and nights gave them the exact temperature necessary for their best display.

There is something mysterious and even uncanny in watching the change of color. When placed upon a green twig the little creature would immediately draw itself out, extend its front and hind legs at full length and become to all intents a part of the twig or branch, so that it was difficult to distinguish it. Meanwhile the mysterious blush of green was deepening and stealing over its back and sides, making the resemblance still more striking. The natural assumption of one who had given the subject no especial attention might be that the anolis had glanced around, and perceiving that it was presenting a contrast not favorable to its personal safety, had assumed a color more protective. In other words, that there was some intelligent act associated with the change. When the little creature was blindfolded it assumed the same tint as at night, and did not change when placed upon the most striking colors, showing that the eye was the involuntary

medium by which the different tints were obtained. The act of adaptation is perfectly involuntary, or made without the knowledge of the animal, being the effect which certain colors have upon the pigment cells of the animal. At least this is the generally accepted explanation, and the experiments which have been made with blind animals seem to show beyond question that the eye is the medium.

These peculiar changes, which are so well known in fishes and reptiles, can be understood by glancing at the pigment cells of a frog. The skin is seen to consist of two portions, the cutis and epidermis, the latter apparently being made up of cells. The cutis has large cavities among the nerves, which are commonly filled with pigment and are very sensitive, contracting and expanding in a remarkable way. The pigment cells are called chromatophores, and vary in color in different animals and in the parts of each animal, and may be red, brown, green, yellow, black or various shades. The color of the chromatophores appears to change during contraction or expansion and constitutes a most complicated and delicate study. Thus, in a little fish (*Gobius Ruthensparri*), Heineke, the German naturalist, while watching its yellow pigment cells, saw them gradually expand and become black.

These cells are distributed all over the body with more or less regularity, and upon their contraction and expansion depends the prevailing color of the animal. Thus, if the pigment cells or chromatophores expand, the prevailing color will become black and the very light spots in the animal dull. On the other hand, if they contract, a reverse effect obtains. Exactly how these wonderful changes in all animals which adapt themselves to their environment are produced is not known, but it is assumed that certain colors through the medium of the optic nerve produce contraction or expansion, and the result is a protective tint or one which assimilates that upon which the animal is resting. The eye receives the stimulus or impression, which passes from the optic nerve to the sympathetic nerve, so reaching the various series of chromatophores. Thus, when a flounder is taken from the sandy bottom and placed on a black bottom, it at once grows darker; in other words, the color of the bottom has in the manner described caused a relaxation of the chromatophores, and the brown and orange colored ones have turned black or dark, thus aiding in the protection of the animal—a protection at once remarkable and interesting. Among the flounders this is very marked. In the octopus I have produced almost instant changes, waves of color being seen to pass over the animal. This is especially noticeable in the little squid cranchia, while the larger squids are marvelous illustrations of this faculty. The dolphin, so common in the Atlantic, is well known for its wonderful changes, not necessarily protective.

The little Florida anolis is easily domesticated, and two specimens kept by me became interesting pets, crawling about without the slightest fear; seeking the snug shelter of the binding of a book in cool weather, coming out to bask in the hot sunshine, showing themselves to be perfect thermometers.

It is doubtful if the anolis would thrive in Southern California as the nights are often very cool. All through the winter here all the reptiles enter what is known as a winter sleep or partial hibernation. At half past four, or as soon as the direct rays of the sun begin to be missed, the lizards leave the rock heaps where they have been sunning themselves, and crawl into the crevices and into holes in the ground, stretch out their limbs to the rear, stiffen, and enter what is apparently complete hibernation; but, as the sun rises the following day, they are warmed into life again and renew all their activity.

Automatic Coupler Law.

The Chicago and Alton Railroad and other roads recently filed petitions with the Interstate Commerce Commission asking for extension of time within which their cars, under the act of March 2, 1893, are required to be equipped with the automatic couplers and power or train brakes, the time fixed by the act being January 1, 1898. The commission has made an order fixing the hearing of such petitions for Wednesday, December 1.

The commission has also ordered that any railroad filing application for extension shall also make, on or before November 20, 1897, a statement under oath of the number of freight cars owned and the number of freight cars which will be equipped with automatic couplers and the number which will be equipped with power or train brakes by December 1, 1897, and the number of freight cars which have been equipped with automatic couplers and the number which have been equipped with power or train brakes each calendar year since the act went into effect.

Airship Crosses to France.

Cablegrams from France state that the balloon of Charles Pollock, who started from Eastbourne, England, October 12, across the Channel, descended safely near Domart, fourteen miles northwest of Amiens.