NATURAL HISTORY NOTES.

As to the Parasitism of Beech-drops.—That curious plant, *Monotropa hypopitys*, common to Europe and America, and commonly known as "beech-drops," "pine sap," and "bird's nest," has been examined by Dr. F. Kamiensky, who gives it as his opinion that it is not, as has generally been supposed, a true parasite, inasmuch as it possesses no true haustoria, but a saprophyte, that is, a non-chlorophyllaceous plant growing in humus. The root fibers appear to be invariably clothed with a dense weft, consisting of the mycelium of a fungus, which covers the extremity of the root fibers like a cap, it is not, however, parasitic on the roots. The fact of the mycelium always accompanying the root of the plant seems to point to some relationship between them worthy of investigation.

The results of Dr. Kamiensky's investigations accord perfectly with those reached by Prof. Jos. Schrenk, of the Torrey Botanical Club of this city, who has had this same plant under investigation for the last two years. Here, as in Europe, the roots of the plant are found to be involved in a mycelium, with which are intermixed spores that have been detected in the act of germination (if that which contains no germ can be said to "germinate"). No connection has as yet been discovered between the roots of the plant and those of the trees under which it grows, and its parasitism appears doubtful.

Toughness of the Egg-shells of an Arctic Bird.—Mr. H. W. Elliott, in his "Monograph of the Sea Islands of Alaska,' says that the thick-billed guillemot is the only egg bird that has the slightest economic value to man on the Pribylov Islands, where it is locally known as the "arrie," from its harsh cry of "arra-arra." The bird in bodily size is the counterpart of our ordinary barnyard duck, but it cannot walk or even waddle as the domestic swimmer does. It lays a single egg, large and very fancifully colored, and the most palatable of all the varieties found on the islands, and hence much sought after by the natives. A large proportion of the eggs become so dirty by rolling here and there in the guano, while the birds tread and fight over them, as to be almost unrecognizable. "I was struck," says Mr. Elliott, "by the happy adaptation of nature to their rough nesting; it is found in the toughness of the shell of the egg —so tough that the natives, when gathering them, throw them, as farmers do apples, into their tubs and baskets, on the cliffs, and then carry them down to the general heap or collection near the boat's landing, where they pour them out upon the rocks with a single flip of the hand, just as a sack of potatoes would be emptied; and then again after this they are quite as carelessly handled when loaded into the 'bidarrah,' sustaining through it all a very trifling loss from crushed or broken ones."

Curious Willow Trees.—The only suggestion of a tree found growing on the Pribylov group, says Mr. Elliott in the work just cited, is the hardy "talnuk," or creeping willow. There are three species of the genus *Salix* found here, namely, *S. reticulata*, *S. polaris*, and *S. arctica*. The first named is the most common and of largest growth. It progresses exactly as a cucumber vine does in our gardens. As soon as it has made from the seed a sprout of six inches or a foot upright from the soil, then it droops over and crawls along prostrate upon the earth, rocks, and sphagnum. Some of the largest talnuk trunks will measure eight or ten feet in recumbent length upon the ground, and are as large around the stump as an average waist of a man. The usual size, however, is very much less; while the stems of *polaris* and *arctica* scarcely ever reach the diameter of a pencil, or the procumbent length of two feet.

Action of Parasitic Fungi.—Mr. Maxime Cornu has recently called attention, in a note read before the Academie des Sciences, to the curious fact that several parasitic fungi cause fallen and decaying leaves to remain green at the spots where they have attacked the plant, when all the rest of the leaf has turned yellow. Microscopical examination shows that the chlorophyl in these spots is in a normal condition, while in the yellowish portion of the leaf it is formed of yellowish globules of altered form. The irritation produced by the parasite preserves the vital activity of the cells from which it derives its nourishment. He considers that this fact throws additional light on the theory that a lichen is an alga stimulated into continued and vigorous growth by the presence of a parasitic fungus.

The "Overflow Bugs" of California.—The following extract from a note from one of Prof. C. V. Riley's correspondents, communicated by him to *Nature*, is interesting as showing how ground beetles, which are usually beneficent to man, may at times become a great nuisance. The insect popularly called an "overflow bug" in California, is, scientifically, the *Platynus maculicollis*. We lived, says the correspondent, in Fresno county two years. It is hot and dry there, thermometer ranging from 96° to 108° for about three months. In June and July, when hottest and driest, the "overflow bugs" filled the air between sunset and dark. One could not with safety open his mouth. They would light all over one's clothes; they filled the house; they swarmed on the table, in the milk, sugar, flour, bread, and everywhere where there was a crevice to get through. They were flying for about two weeks, and then they disappeared mostly or did not fly much, but were hidden under papers, clothing, and in every available place. They were all through the foot hills the same, and much the same in Los Angeles, about Norfolk, but they did not fly much in the latter place. In Los Angeles they seemed to be worse before the "Santa Annas," a hot wind from the desert filling the air with sand. Chickens, no matter how hungry for insects, refused to eat these pests. The visitation of these insects formed a veritable plague.

The Crow.

Professor Linden said a good word the other day at Buffalo for that much persecuted bird, the common crow, *Corvus americanus*). The crow of America belongs to a scattered family of about two hundred species, including among them the buzzard, jay, raven, and magpie. Of the genus proper to which the crow belongs, seven examples are found in the United States, the great black raven being at the head. In the wilderness, about one hundred miles from Buffalo, on the shores of Lake Ontario, ravens were found. Their nests were so secluded as rarely to be discovered. So wary were the birds that Mr. Linden had found it impossible to obtain a specimen. They were reported more abundant on the Canada shore of Lake Ontario, but it was impossible to procure a specimen even there, though a liberal reward had been offered. The crow was only preserved from annihilation by its great cunning. Even in captivity the bird displays a degree of sagacity which almost resembles human intelligence. Mr. Linden admitted that the crow could hardly be called a sweet singer, still, when tamed, he made a very interesting pet. On the whole, he might safely be set down as a useful bird and a real friend of the farmer. He eats large quantities of noxious insects, and though he has a bad habit of pulling up young tender shoots of grain, it was a question whether the damage was not more than compensated by the number of larvæ of beetles thus brought to light and devoured.

Occupation for the Insane.

A reporter of the *Tribune* recently visited the City Asylum for the Insane on Ward's Island, to learn what has been accomplished there in providing occupation for the patients. There are usually somewhat more than a thousand patients in the asylum. Many of them are not only insane, but sick and under medical treatment; some are too feeble to do any work; some are too violent, and some are too imbecile. But, after subtracting all these classes, there are left a large number who have the intelligence, the strength, and the skill necessary to make them valuable in the workshop. In regard to the employment of such persons as these, Dr. Macdonald, the superintendent, gave the following facts from his experience:

Out of the 1,200 or more patients, about 400 are available for work. In this estimate those who do light chores in the building are not included, but simply those who pursue some regular calling for seven or eight hours a day. It might be supposed that they would manifest some unwillingness to work; but, on the contrary, they often show much enthusiasm. Of course much care must be exercised in selecting men for occupations which require the use of tools. But only the most docile and intelligent are chosen for these departments, and they are carefully searched every night to see that they have secreted no tools. It sometimes happens that patients become sullen or flighty, and refuse to work. In such cases they are allowed to remain idle until the spell passes away, when they are glad to begin again. In the mechanical departments, of which more will be said further on, a sane foreman is employed who directs the workmen. Though they are fond of employing themselves, yet, with the capriciousness of lunatics, they soon grow weary of doing the same thing all the time. And so recreation of some kind is necessary. They are therefore taken out for walks, or allowed to play football in the yards, or to play a sort of quoits in the halls, which consists in pushing a round wooden disk over the smooth floor, the object being to make it land in a chalked circle. There is also a pleasant amusement room, with a stage, in which concerts, plays, and readings are given from time to time. The patients enjoy these entertainments with all the delight of children. In fact, in their work and play they have to be treated as children.

In the selection of work for patients, the aim is to give to each the work he is used to if possible, or something related to it. There are more than one hundred callings represented in this asylum, and it would be obviously impossible to start them all going here. What we aim at is to have a few of the more common trades in practical operation. For instance, all the carpenterwork and bricklaying and general repairing of the Asylum are now done solely by the patients. That of itself is no small item. In the kitchen the only salaried person is the cook; his twenty or more assistants are patients. The engine and boiler-room, one of the largest in the city, is attended to entirely by patients. It is not thought safe to employ patients as barbers, but their assistants are patients. In the summer about one hundred and fifty patients are engaged in farm work.

In the mat room the visitor saw fifteen patients, principally old sailors, working busily. In the tailor-shop there were twenty-five, who make all the clothes worn in the institution. The only salaried man is the foreman. Twelve were employed in the shoe-shop, seven in the tin-shop, and about fifty in the paint-shop and carpenter-shop. The latter do all the painting and repairing required in the institution. A printing room has been recently established. The department printing has heretofore been done at Bellevue Hospital by prisoners, but was not done satisfactorily. The Board of Charities and Correction lately passed a resolution transferring the printing bureau to the City Asylum for the Insane, and presses are now put up there. Dr. Macdonald says that he hopes in time to be able to do not only the department printing, but much of the corporation printing—perhaps even the *City Record*.

He thinks this is entirely practicable, as next to cigar makers printers are more numerous in the asylum than men with any other trade. If this plan should ever be realized it would save the city a large sum of money in printing. In this shop, also, the visitors were not noticed even by a look About a dozen men were engaged in putting a large printing press in position, and seemed more eager to do their work than the sane foreman who was directing them. A few compositors were at work before their cases on circulars and department specifications.

"We have about twenty-five men at work here now," said the doctor, "and when we get set to rights will have many more. As you see, the printing office is over the steam laundry, and we will run it entirely by steam. We shall print all the official matter of the department, and, as we get stronger, I shall ask the city to send its printing up here. I have also a novel idea in view—a weekly paper entirely composed, edited, published, and set up by lunatics. Of course in a quiet way I shall exercise a sort of censorship of the press; but all the articles that will appear in it will be written by the patients. And I will venture to say that it won't be such a very crazy paper either."

Dr. Macdonald finds that the great majority of patients are happier and more docile when employed, and he is satisfied that they are capable of doing many things which they have hitherto been supposed unfit for.

Oil of Turpentine as a Disinfectant.

In a lengthy paper upon the disinfectant which can be obtained by shaking oil of turpentine with water, Rennard sketches the history of ozone and peroxide of hydrogen. The following points will be found interesting at the present time when so many so-called ozone compounds are before the public.

The bleaching properties of certain essential oils, especially of oil of turpentine, which is seen in its effect upon the corks of bottles containing it, must have been known for a long time. It was first explained by Schoenbein, the discoverer and chief investigator of ozone. In 1851 he stated, in the *Journal fuer prak. Chemie*, that the bleaching of the corks in turpentine bottles was due to the oxidizing action of the oxygen which had been excited or rendered active by the oil, and he proposed to restore old paintings with oil of turpentine, which must act like the peroxide of hydrogen discovered in 1818 by Thenard, and recommended for this purpose. Schoenbein also tested the oxidizing power of the ozonized turpentine oil in other ways. He said that it decolorized litmus and indigo solution, and turned paper blue after it had been impregnated with iodide of potassium and starch. In 1853 Williamson divided essential oils into two classes, those which are ozonized and those which are not, and in the former he placed oils of turpentine, lemon, lavender, peppermint, etc. At first Schoenbein was of the opinion that the oxygen excited by oil of turpentine was identical with the ozone formed by electricity or moist phosphorus. After Houzeau (*Poggendorff's Annalen*, 1856) obtained from peroxide of barium and sulphuric acid a gas that he thought was identical with ozone, Schoenbein followed up the investigation further and found that it was not so. In a long paper contributed to the *Annalen*, in 1858, he showed that when hydrochloric acid acted upon peroxide of barium, or one of the alkalies, only peroxide of hydrogen was liberated, but never chlorine. On the other hand the peroxides of the heavy metals always yielded chlorine with hydrochloric acid. Hence the active oxygen got from the peroxides of one class must differ from that obtained from the other class. That got by electrolysis or phosphorus agreed with the one obtained from peroxides of the heavy metals. To distinguish one from the other he called the active oxygen that forms peroxide of hydrogen autozone, to distinguish it from the negative form already called ozone

In the same year, 1858, Schoenbein proved that ozonized oil of turpentine, that is, that which had long been exposed to the air, contained autozone, and in contact with water formed peroxide of hydrogen.

In 1866 we find it stated that the camphenes in general, but especially oil of turpentine, juniper, copaiba, camphor, and lemon, also benzole, and the hydrocarbons of petroleum, oil of cinnamon, peppermint, and caraway, cod-liver oil, and croton oil, in contact with water form peroxide of hydrogen. Oil of juniper excels turpentine in this respect.

This discovery seemed to be overlooked until 1873, when Dr. Radunowitsch and Charles Kingzett recommended turpentine water as a good disinfectant and antiseptic. Before this, turpentine had been used in making dry albumen from blood, in bleaching ivory and bones, etc. A solution of peroxide of hydrogen was used in Paris to bleach the hair, and turpentine water can be employed for the same purpose.

Radunowitsch published his investigations in the proceedings of the Russian Chemical Society, in 1873. He assumed that ozone is formed by the slow oxidation of oil of turpentine, but that it escapes with the vapors, while the peroxide of hydrogen remains in solution. To obtain as much peroxide of hydrogen as possible, he mixed equal volumes of water and oil, and exposed the mixture to sunlight, shaking often. In three days the lower layer of water was acid, and gave with different reagents the reaction for peroxide of hydrogen. Radunowitsch recommended the solution for disinfection, and employed it for some time in the hospital for cleansing gangrenous wounds.

Kingzett published his experiments in 1874 in the *Journal of the* (London) *Chem. Society*. At first he assumed that by the oxidation of oil an organic peroxide was first formed, and when treated with water this was decomposed with camphoric acid and peroxide of hydrogen. He found that at the end of fifty-four hours there were 45 parts of peroxide of hydrogen in 10,000 of the solution, or nearly one-half per cent. He also demonstrated the antiseptic and disinfectant power of the solution; 5 c.c. of a quarter per cent solution kept 50 to 100 c.c. of milk, eggs, etc., a long time.

Kingzett, in a second paper, published in 1876, refers the hygienic influence of pine and eucalyptus trees to similar causes, that is, the continual oxidation of their essential oils and formation in the air of peroxide of hydrogen. He also said that patients recover more quickly in wooden hospitals for like reasons He says that the solution contains none of the oil of turpentine, that it is not poisonous, and will not injure linen garments or fabrics. It does not attack utensils and tools, and is completely volatile.

In making turpentine water freshly distilled oil is not so good as the old that is partially changed to resin. Rennard, in his experiments, mixed Russian turpentine, that had been several years in the laboratory, with water, in the proportions of one to ten, twenty, and thirty. They were kept in open bottles, and often shaken. The amount of peroxide formed in the first three days was small, but gradually increased; the oil turned yellow. The chromic acid reaction was used in testing for peroxide of hydrogen. The clear-filtered solution was acidified with a few drops of dilute sulphuric acid, ether poured on it, and then a few drops of a solution of chromate of potash added and shaken. If peroxide of hydrogen is present, the ether becomes more or less blue. The longer it is exposed to the air the more peroxide is found in the solution. A quantitative estimation of the peroxide of hydrogen was made by adding permanganate solution until the last drop caused a pink color that lasted a few seconds. Samples of different ages were found to contain from 0·3 to 2·8 per cent.

Jacobsen says that a very active oil of turpentine is obtained by mixing one part of rectified oil of turpentine with three parts of absolute alcohol in a loosely closed vessel. It is left a few weeks in the sunshine, then the alcohol is allowed to evaporate. The resinous mass that remains when shaken with water forms a powerful bleaching liquid.

This subject has an additional interest in this country from the fact that a manufacturing chemist in the West is now selling a substance labeled "aromatic ozonized liquid," which is strongly acid, has an odor of essential oils, and probably contains oils of turpentine, wintergreen, etc., in the active or ozonized condition. I. B.

Lac.

Lac is one of the many useful productions of the Indian Empire; it is also found in large quantities in other parts of the Asiatic continent. This substance forms a crust surrounding the branches and twigs of certain trees, and is the excretion of an insect called *Coccus lacca*. The insect belongs to the natural order Hemiptera, genus Coccida, which are remarkable for their powers of propagation, and often their numerous offspring are so closely crowded together that the trees on which they live are exhausted and injured by them. Hampden G Glasspoole, in the British *Pharmaceutical Journal*, says: The trees selected by these insects for the depositing of their eggs are the bishar tree, *Croton lacciferum*, the *Butea frondosa* (palus prass or dhak), *Ficus religiosa* (peepul), and *Schleuhera trijuga* (koosum). Of the last mentioned tree Dr. Brandis, in his "Forest Flora of Northwest and Central India," says, it produces the best lac, which keeps good for ten years, while the lac from other trees is said to last only two years. In the central provinces of India the natives say that lac from this tree is capable of being propagated on others, but the koosum tree itself will not admit of the propagation of lac from trees of other kinds.

Mr. J. Mackee, in a paper on "The Formation of Lac Preserves," in the *Quarterly Magazine of the Indian Forester*, vol. i., page 269, says: "After the larvæ appear, they crawl about the stem of the plant in search of the young juicy spots from which, when once fixed by their proboscis, they cannot be removed without fatal injury. The males and females are identical in size and shape, and both commence at once the formation of their cocoons by excreting a substance resembling lac, those of the male being ovoid or elliptic in form, while those of the female are more circular and exhibit three distinct apertures, arranged in triangular fashion in the roofs, one being the anal aperture through which impregnation is accomplished, and the larvæ eventually swarm, the other two those by which the insect obtains a supply of air. About ten weeks after the birth an important change takes place in the larvæ, the female cocoons are completed, and the insects have assumed the final or imago state. As the female insect never shifts her place, but remains fixed in the position she first took upon the twig, the male is obliged to seek her, which he does by leaving his cell in a backward manner by the ventral aperture, and crawling on the female cell, he fulfills his office, and almost immediately dies. Impregnation having been accomplished, the female busies herself in sucking up large quantities of the vegetable juices, increases greatly in size, and begins the excretion of true lac. The oval body of the insect becomes a deep red color, and if at this stage a piece of the lac incrustation is broken off the insect is perceived as a little bag of red liquid (which yields the dye), and the place where the wound has been made bears a snow-white mark, as if it had been touched with a point of chalk; a similar mark is also found under every insect. Under the microscope they clearly appear to be specks of a semi-crystalline saline efflorescence. After having laid her eggs, the female dies, and soon a new generation swarms forth to enact the same process again. The thickness of the lac incrustations varies from half an inch to an inch in diameter. The branches are broken off from the trees by the natives, and in this state it is carried to market and called stick-lac."

In commerce there are three varieties of lac, known as stick-lac, seed-lac, and shell-lac. Stick-lac, as just stated, is the resinous substance gathered on the branch in its natural condition, and often containing the dead insect; this when chewed colors the saliva a beautiful red, and when burnt emits a strong agreeable odor. When stick-lac has been separated from the branches, etc., and coarsely pounded, the native silk and cotton dyers extract the red color from it by boiling it in water. The yellowish, hard, resinous powder which remains has somewhat the appearance of mustard seed, and is called seed-lac; this is sometimes melted together, and called lump-lac; it is used by the natives to make bracelets, etc. Shell-lac is prepared by putting a quantity of seed-lac into long cloth oblong bags, two men holding each end of the bag extended over a gentle charcoal fire, by which process the lac melts. When quite fluid each man twists the bag so as to force out the melted substance, and this drops upon pieces of the stem of the plantain (*Musa paradisiaca*), placed beneath, the smooth and glossy surface of which prevents the lac from adhering. The degree of pressure regulates the thickness of the coating; at the same time, the fineness of the material the bag is composed of determines its clearness and transparency.

The chemical constituents of the different kinds of lac from the analysis of Dr. John Unverdorben (who made resinous bodies his particular study) and Hatchett appear to be as follows:

Stick-lac on the branches, etc., just in the state it is found contains:

1. An odorous resin, soluble in alcohol and ether.
2. A resin insoluble in ether.
3. A bitter balsamic resin.
4. Acid of lac (laccic acid).
5. A dun-yellow extract.
6. Coloring matter analogous to that of cochineal.
7. A fatty matter like wax.
8. Some salts and earth.

Unverdorben classified the resin produced in lac, besides the coloring matters and laccic acid, thus:

1. A resin soluble in ether and alcohol.
2. A resin, insoluble in ether, soluble in alcohol.
3. A resinous body little soluble in cold alcohol.
4. A crystallizable resin.
5. An uncrystallizable resin, soluble in ether and alcohol, but not in petroleum.

Seed lac contains, by Mr. Hatchett's analysis, in 100 parts:

Resin	68·0
Coloring matter	10·0
Wax	6·0
Gluten	5·5
Foreign substances	6·5
Loss	4·0
	100·0

Dr. John's analysis gives very similar results, save that among the foreign substances he notices 1·0 salts of potash and lime, to which probably the white spots on the bark under the incrustation, which were previously noticed, may be due.

Shell-lac, according to Mr. Hatchett's analysis, gives:

Resin	90·5
Coloring matter	0·5
Wax	4·0
Gluten	2·8
Loss	1·8
	99·6

Lac resin can be procured pure by solution in alcohol; it makes an excellent varnish. It is soluble in diluted hydrochloric and acetic, but not in sulphuric acid. Shell-lac has a great tendency, says Dr. Ure, to combine with salifiable bases, as with caustic potash, which it deprives of its alkaline taste. This solution, which is of a dark color, dries into a brilliant transparent reddish-brown mass, which may be redissolved both in water and alcohol. By passing chlorine in excess through the dark colored alkaline solutions the lac resin is precipitated in a colorless state. When this precipitate is washed and dried, it forms, with alcohol, an excellent pale yellow varnish, especially with the addition of a little turpentine and mastic. With the aid of heat shell-lac dissolves readily in a solution of borax.

Lac-dye or cake lac is produced from a watery infusion of ground stick-lac evaporated to dryness and formed into cakes about two inches square and half an inch thick; these are of various qualities and stamped with peculiar marks to designate their different manufacturers. This dye is of a splendid crimson color and is used by the natives for dyeing silk, but seldom for cotton on account of the expense. The color of the red leather of Nurpur and other places is due to this dye. This dye has long been known in Europe, for before the discovery of the cochineal insect it was universally employed for dyeing red. The crimsons of Greece and Rome and the imperishable reds of the Brussels and Flemish schools were obtained from this insect.

Dr. John's analysis of these cakes is as follows: Coloring matter, 50; resin, 25; solid matter, consisting of alumina, plaster, chalk, and sand, 22. These cakes when prepared for dyeing are dissolved in diluted muriatic acid, and tin is the mordant, and this gives a very brilliant scarlet hue to woolen cloths.

Lac has been known to the Hindoos for many ages. Their carpenters mix the crude substance with native spirit, which produces a strong colored varnish which they use instead of paint for the woodwork of their houses, temples, etc. The beautiful glossy lacquer with which the Indian houses, etc., are covered is also produced from the same source. Indian lapidaries make use of lac as a vehicle for retaining the hard powders used in cutting and polishing gems. Coarse lac is used for making bangles or ornaments in form of rings for the arms of the lower classes of females, the best shell-lac being used in the manufacture of ornaments for the superior classes.

In Ainslie's "Materia Indica" it is stated that a tincture of lac is a favorite medicine among the Arabians in preparing cleansing washes; they call it "meliawer." Also a decoction of stick-lac in mustard seed oil, to which has been added a little powdered root of the *Morinda citrifolia* is used in Behar as an unguent for anointing the body in cases of general debility. Lac is found in most parts of India; in the central provinces it occurs very extensively. It is also found in some of the countries of Southern Asia, Siam, Ceylon, some of the islands of the Eastern Archipelago, and China, Siamese lac being held in high estimation.

MISCELLANEOUS INVENTIONS.

An improved automatic fire extinguisher has been patented by Mr. Paul Oriolle, of Nantes, France. This is an apparatus which automatically attacks a fire immediately on its breaking out. This apparatus is caused to act by the slightest abnormal rise of temperature, and consequently operates so as to extinguish the fire at the very beginning. The principle of the apparatus is based on the use of substances fusible at low temperatures for closing the orifices of pressure water pipes, so that the fusion of such substances causes the opening of the pipe, and creates a continual projection of liquid.

An improved rotary clothes drier has been patented by Mr. Horace Palmer, of Lebanon, Conn. The invention consists in a rotary clothes drier having a slotted pivoted post, with bars hinged to it, and carrying the clothes lines. To these bars are hinged the upper ends of connecting bars, the lower ends of which are pivoted to crossed bars placed in the slots of the posts, and held down by a lever to put the clothes lines under tension.

An improved necktie fastener has been patented by Mr. Jacob Goldberg, of New York city. This invention relates to devices for attaching a necktie to a collar button; and it consists in a case containing an apertured spring-operated slide adapted to engage with a collar button to hold the necktie in position.

An improved pistol and carbine holder has been patented by Mr. Louis S. Flatau, of Pittsburg, Tex. The object of this invention is to provide cheap and efficient means for carrying firearms either upon the person or on horseback, it being so constructed that the arm may be quickly and easily drawn for use and easily returned to place in the holder.

An improvement in beehives has been patented by Mr. Daniel K. Barnhart, of Gaines, Pa. The object of this invention is to keep bees warm and dry in winter and cool in summer. The upper part of the hive and the honey boxes, when used, are surrounded by an air chamber, which protects the bees from the heat of the sun.

Mr. Robert W. Pain, of New York city, has patented an automatic harmonica in which a perforated sheet of paper is employed to regulate the admission of air to the reeds. The invention consists in the combination of a perforated strip of paper or music sheet, and a flexible wind-chest or air-compressor pump, with an ordinary harmonica or similar instrument, whereby the harmonica is made to execute tunes automatically.

Mr. James M. Hawley, of Odin, Ill., has patented an improved machine for cleaning, separating, and grading grain. This machine separates wheat from other grains and seeds, and grades the wheat according to the size of its kernels. It will readily separate timothy and red top seeds.

An improved cotton chopper and cultivator has been patented by Mr. James D. Patterson, of Competition, Mo. This machine is well designed and arranged for the peculiar work of cotton cultivation. It is provided with plates to be forced into the ground by the feet of the operator to bar off the plants, and their construction permits of their passing over any rubbish, and thus prevent the rubbish being dragged along and the plants being torn down thereby.

An improvement in harvesters, patented by Mr. Stephen McB. Krigbaum, of Golden, Col., relates to that class of harvesters in which the cut grain is carried across the platform and elevated to a binder's table or to a binding mechanism. The object of this invention is to insure the even falling of cut grain upon the platform, and thereby prevent the loss of grain resulting from the uneven falling of the grain.

An improvement in spring wagons has been patented by Mr. George A. Elliott, of North Grosvenor Dale, Conn. This invention relates to that class of carriages known as skeleton, buckboard, and side bar carriages or buggies; and it consists, principally, of a novel construction and arrangement of the springs, whereby the buggy is made light, easy riding, and low.