"We want no theorist, we require a practical man." "Where can I find a practical man to take hold of my invention and push it?" How frequently we have heard these remarks! And how often, when we have turned to the speaker and asked for a definition of the term practical man, has a puzzled expression and a lame attempt at explanation, usually ending with "Oh, I know what I mean," been the sole reply!

Our street car friend is one type of the practical man. He is of the "self-styled" variety, the most numerous, probably, existing. He is the least useful as an individual, the least progressive as a brain worker, and the least enlightened as a member of the human race, of any class of civilized mankind. He is a compendium of thumb rules, an epitome of set ideas encircled by the iron barriers of his own mind, which allow of neither the substitution nor admission of better views, nor the expansion of those within. At mere handicraft, he may be skilled; but ask him for a reason, and he is dumb. He it is who leads the van of the shriekers against free and liberal education, who clings to that sophism which argues that the "world is the best teacher;" who turns his son directly from the nursery into the shop; who renounces the inventor and all his works, until compelled, by absolute force of circumstances, to yield to progress: and finally, who, having no knowledge other than his manual skill and set of thumb rules, scorns it in others.

"But we want no longhaired philosophers to run our shops," possibly thinks the reader. True, nor need we have them. "Science," says Lord Brougham in his fine definition of the term, "is knowledge reduced to system." The true scientist is he who not only possesses this systematic knowledge, but, if he be so situated as to require its immediate aid, knows how to put it in practice. He is neither the sage who meditates erudite abstractions, nor the *soi-disant* "practical man" who devotes himself to mere system. He is eminently the man of practice, but of intelligent practice, who is a master of principles, of reasons: to whom the mere application of a truth is nothing as compared with the truth itself: the latter immutable, the former an idea to be changed as occasion may require or judgment suggest. Such is the person we mean when we seek the "practical man," not the blatant individual who thrusts himself forward under that title.

Our acquaintance of the street car carried off our paper. He honestly mailed it back to us the other day. We smiled as we saw the thumb marks on all the pages, and opposite an engraving there was a pencil note of: "I kno a bettur plan than this." Perhaps after all a latent idea in his brain has been aroused; or has he taken the invention fit? Should he see this, he will probably scout the idea that our humble efforts have awakened him, for "it does'nt take no papers to learn me my business, you know."

LANGUAGE OF INSECTS AND ANIMALS.

Our notice was lately attracted to the labors of a colony of small black ants, which has taken up its abode in a chink in the wall outside our office window. A solitary ant, evidently on a private foraging expedition, suddenly encountered a scrap of bread, which had fallen on the sill several feet from his home. Instead of nipping off a fragment and carrying it away, the insect apparently made a careful examination of the entire piece and then turned and ran at full speed back to the hole. In an instant hundreds of ants emerged and marched directly to the bread, which they attacked, and very speedily, morsel by morsel, transported it to their dwelling.

Another good instance is that of a terrier dog belonging to a friend, from whom we obtained the facts. The animal somehow, it seems, excited the ire of a larger dog, and accordingly received an unmerciful shaking. Shortly afterward the terrier was seen in close consultation with a huge Newfoundland. The result was that both trotted off together, and found the terrier's assailant, which then and there received a furious thrashing from the Newfoundland, while the terrier stood by and wagged his tail in high glee.

The last case which came under our own observation was that of a brood of very young chickens which, losing their parent, refused to go with another hen but manifested an extraordinary affection for a pair of turkeys almost as juvenile as themselves. The turkeys have assumed all the parental functions, scratching worms for their charges, and gathering them under their wings, while the chickens appear to comprehend the significance of the turkeys' "peep" equally as well as they did the clucking of their natural mother.

In the case of the ants, it is clear that the single insect must have imparted the news of his discovery to an entire community of his fellows; in that of the dogs, the terrier must have made the Newfoundland understand the circumstances of his misfortune and so secured sympathy and assistance; lastly, between the chickens and turkeys, apart from the singularity of the relation, it is curious to remark that the language of one fowl was understood by others of different species.

DEAD CITIES.

To Americans especially the ancient world is little more than an abstraction. Save the relics of the mound builders which dot the prairies of the West, and the occasional discovery of old Indian remains buried here and there in New England, we have little to bring us face to face with evidences of human existence in ages gone by. We study our histories and become familiar with them as we are with the tale of the romancer: we can discuss the Punic wars with as much freedom, perhaps more, than the closing campaigns of the Rebellion: but the new world, except in its sparsely filled museums, shows us nothing tangible, nothing which we can directly connect as part and parcel of the times and men of historic yore.

But let the old world be visited, and the antiquarian may find the very handiwork of nations which have utterly disappeared. Whether he wander through civilized Europe, half civilized Asia, or barbarous Africa, everywhere are relics of the past, all forming, to the lover of archæology, a feast, never so rich as at the present day. He may ramble through Spain, and muse over the quaint architecture of Moors, recalling the heroic prowess of the Cid; he may climb that hill jutting into the harbor of Cartagena, and stand in a building reared by the army of Hannibal. He may trace out the Roman camps in Northern England, or the earlier relics of the Druids and Norsemen, or he may roam for hours through the streets of Pompeii, reading the history of everyday life seventeen centuries ago in the marks of the wheels on the pavements, the signs on the stores, or the very bread lying, black and dry, in the ovens. He may watch the laborers as they slowly dig out the loose ashes in a buried room, and will see them stop their work when the floor is almost reached. Then, as we did ourselves one warm summer morning not many years ago, he will see the men carefully grope through the residuum. A shout denotes a discovery, and then very carefully a bar is pushed down into the place where the object is supposed to be. Into the hole thus made, the liquid plaster is poured. A few moments of anxious, curious delay and the spot is again attacked, the ashes thrown quickly upward, and the plaster, now set and hard, withdrawn. Perchance the mold of some household object is produced; sometimes it is a human figure, such as we saw unearthed, which, with its arms doubled over its head, had crouched into a corner for shelter, but only to die there, suffocated in the deadly shower.

Then there are the Syracusan ruins, little visited by the tourist, but overflowing with interest. He may wander past the very walls, cross perhaps the threshold over which Archimedes stepped while pondering the problem, of which when solved, he shouted *Eureka!* (I have it), and rushed naked, through the streets. On some seat of the amphitheater, which he enters, the great inventor may have reclined while devising his burning glass, his levers, and the engines of war with which he routed a besieging enemy. On descending the huge caves hewn from the solid rock, he may marvel at the knowledge of acoustics which dictated to the tyrant Dionysius the building of that labyrinthine passage which so closely counterfeits the duct in the human ear. Clambering up the rough hewn steps, the little closet is before him where the cruel king used to sit and hear the slightest whisper of his captives in the vaults below. The tearing of a scrap of paper sounds there like the rushing of a vast wind, and a pistol report is deafening. Hard by is the circus made famous by the story of the slave Androcles, whom the lion refused to attack because his antagonist had before removed a thorn from a wounded paw. There also is one of the earliest of Christian churches, erst a heathen temple, in the crypt of which are still to be seen the gridiron, the pincers, and the other instruments of torment by which perished the early martyrs of the Church.

The subject is a fascinating one, and, as we write, it looms up before us to such magnitude that the traditional "acres of paper and oceans of ink" would barely suffice to do it justice. But the confines of newspaper space are inexorable. Therefore, with this brief glimpse of the romance of archæology, we refer the reader to the latest news from the subterranean world, which he will find in the record, of the excavations and explorations now or lately in progress, printed on another page.

SCIENTIFIC AND PRACTICAL INFORMATION.

STRASBOURG GOOSE CULTURE.

Pâte de foie gras, or Strasbourg pie, is an oleaginous luxury, very expensive in this country, and about as indigestible as it is costly. As its name indicates, it is a pie filled with the livers of geese, which are rendered, by peculiar treatment, diseased, and hence abnormally enlarged. To produce the necessary development, the fowls are closely confined by tying, for a period of seven weeks, in dark cellars, during which time they are fed with a paste of maize, chestnuts, and buckwheat. This is stuffed down the throat once in two hours, and the effect is at last to produce an enormous enlargement of the liver, when the fowls are killed, and the livers used as above mentioned.

PULVERIZING THE CHLORATES.

Chlorate of potash and other chlorates are extensively employed in the manufacture of fireworks. The inconvenience, of moistening with alcohol before pulverizing them, and pulverizing wet, may be overcome by employing the following method of Gawalovski: The salt is dissolved in hot water until a perfectly saturated solution; is obtained, when a pane of glass is dipped into the solution; and on taking it out, it is found covered with a layer of fine crystals of the salt. They are scraped off with a paper card on to a sheet of paper, and form a kind of meal. This method is entirely free from danger to the workmen, and a large quantity of the salt is readily prepared in a relatively short time and with very little inconvenience.

ACTION OF SULPHUR PREPARATIONS IN CHRONIC LEAD POISONING.

By the advice of Dr. Liebreich, M. Siew has attempted to chemically combine the lead distributed through the organism, so as to render it harmless. To satisfy himself of the possibility of doing this, he injected subcutaneously some chromate of lead; and after introducing suitable sulphur compounds, he tested for sulphide of lead at those points. If alkaline sulphides were administered, the red color of the injected tissue remained unchanged; but if a rabbit partook of glycosulphuric acid, which is easily soluble in water, and forms with lead a very insoluble salt which passes off unchanged from the system, then the injected part showed a black spot. Siew considers this to be sulphide of lead, from the reduction of the glycosulphate of lead. That this salt is really reduced by the organism is proved by feeding animals a long time on glycosulphate of lead, when the walls of the stomach are found to be black. He does not state his conclusions.

LIME DEPOSITS IN WATER PIPES.

MM. Fabre and Roche point out that wherever there is a joint in water pipes, made to connect tin conduits or copper faucets, at such points carbonate of lime is most abundantly deposited. If a piece of silver be placed inside in contact with the lead pipe, it becomes covered with the carbonate in a very short time. The investigators find that all metals, electro-negative with relation to lead, are thus affected. A voltaic couple is in fact formed, and a veritable chemical precipitation caused.

TESTING URINE FOR ALBUMEN AND SUGAR.

The following tests by Siebold are so simple that an inexperienced person can employ them for testing urine: In testing for albumen, ammonia is added to the urine until it is slightly alkaline; it is then filtered, made slightly acid with dilute acetic acid, and a portion of the mixture boiled. This portion is compared with the cold portion, when any turbidity is easily detected. In testing for sugar, he employs a modification of Roberts' process, whereby an inexperienced analyst can detect $\frac{1}{2}\frac{1}{0}$ per cent of sugar, while a more experienced person can easily recognize half that quantity. About one and a half or two fluid drachms of Fehling's solution is heated to boiling, and five to ten drops of the urine added. If much sugar be present, a yellow or brick red precipitate is formed. If this does not happen, add 50 or 80 minims more of urine, and set aside to cool. If the liquid is not milky when cold, less than $\frac{1}{4}\frac{1}{0}$ per cent sugar is present.

ANOTHER NILE EXPLORING EXPEDITION.

An expedition is being organized in Egypt for the purpose of examining the geological and physical constitution of the valley of the Nile, and of the land bordering on the Red Sea. The most important question to be determined is the possibility of establishing a branch of the river in the ancient bed of a stream occupying the base, or the valley called by the Arabs the Valley of the Dry River. If this work can be accomplished, a large amount of now waste land will be rendered suitable for agriculture.

NON-INFLAMMABLE SHIPS.

The British Admiralty have lately caused some experiments to be conducted at Plymouth, England, upon wood saturated with a solution of tungstate of soda. These, we understand, have given successful results, sufficient to warrant the construction of two small vessels, one made of ordinary timber and the other of the same material treated with the chemical. Both, when completed, will be filled with combustibles and fired simultaneously, thus submitting the efficacy of the protective substance to a final and crucial test.

PRIMEVAL MUSICIANS.

Another curious relic of primeval man has been discovered, which shows that our very remote ancestors, in addition to being cognizant of the arts of sculpture, drawing, and engraving, were also, in their rude way, musicians. M. Piette has recently found, in a cavern in Dourdon, France, mingled with scraps of pottery, bones of animals, and flint implements, a flute. The instrument is made of bone, and has but two holes, so that it could produce but four sounds. It bears a close resemblance to the similar instruments used by the savages of Oceanica.

DANGER IN BAD FLOUR.

From an investigation, recently conducted in Petersburgh Michigan, into the cause of the epidemic of cerebro spina meningitis, with which the locality has been afflicted during the past spring, there appears ground for ascribing the prevalence of the disease to some poisons in the food of the people. Experiments conducted many years ago showed that grain affected with smut was capable of producing violent illness. Ergot of wheat is more active even than ergot of rye. The examining physician, in the present case, reports that the crop of the first mentioned grain, raised in the vicinity last year, contained much more smut than usual. It is, therefore, possible that the disease is due to consumption of bad flour.

ARSENICAL WALL PAPER.

Some new cases are reported, by the Michigan State Board of Health, of severe illness caused by living in rooms papered with green hangings. Two instances are mentioned of families becoming sick; and on the paper being examined, 1·16 grains of arsenic to a square foot of surface were found.

ORNAMENTING METAL SURFACES.

A NEW process for ornamenting metal surfaces, by K. Goddard, of Richmond, N. Y., consists in plating, electroplating, or otherwise covering a plate, bar, or ingot of soft metal with a thin film of harder metal, and then rolling out or pressing the ingot into a sheet; whereby the coating is broken into irregular forms, and a marbleized appearance produced on the surface of the sheet

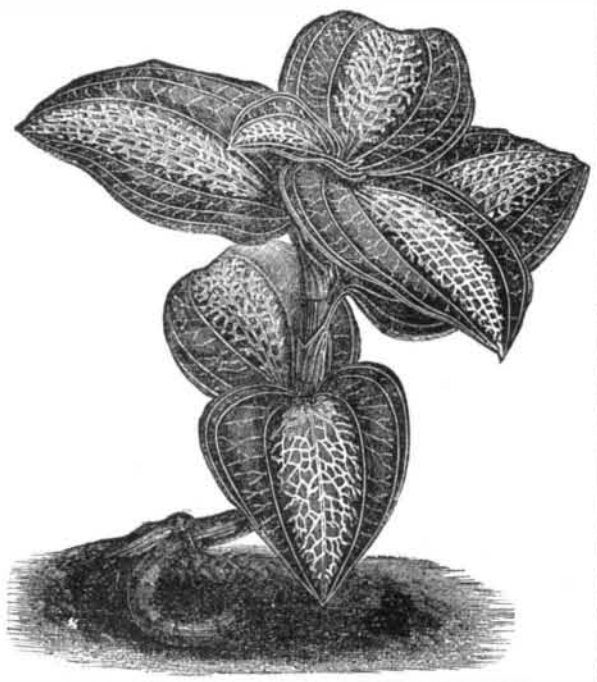
Sensitizing Gelatin Paper.

This is accomplished in a solution of one part bichromate of potash in twenty parts of water. The purer the bichromate salt, the better the paper. If small sheets of eighteen to twenty square inches are to be sensitized, the above solution is poured into a zinc or porcelain dish, the bottom of which should be covered to the depth of half an inch at least. The gelatin paper is dipped into the solution and left there until it gets soft, which generally takes thirty to forty seconds. It is then taken out and laid, gelatin side down, on a well cleaned glass plate. By rubbing with a piece of india rubber, not too hard, the greater part of the liquid is removed from the paper. On lifting the paper from the glass, it has a fine, smooth surface, on which there will be no streaks or drops formed afterward, as it is already half dry. It is then hung, on laths provided with pegs, to dry. Thus prepared, it will bear a much higher temperature than when the solution is not pressed out. In cold weather, the paper can remain some minutes in the chromate bath; it should be left there until soft and pliable.

In preparing large sheets, another method must be employed. A sufficient number of thin strips of pine wood, three fourths of an inch wide and long enough to rest on the opposite side of the dish, are saturated with shellac varnish, and, when dry, rubbed with cocoa butter, and then polished with an old linen rag. Horizontal sticks are put up in the preparation room with notches to receive these strips. The dish for a large chromate bath is best made of stout zinc. A sheet of gelatin paper is allowed to float on the bath, gelatin side down, until soft, when one end is lifted up and laid on one of the pine strips; another strip is laid on the paper, and the two clamped together. The paper is then drawn, face down, over a glass rod or tube fastened to one side of the dish. In this way small air bubbles are removed, as well as a large portion of the solution. The paper is now hung up by placing the strips of wood clamped to it in the notches on the horizontal sticks. A third strip is pressed gently against the back of the paper just below the others, and drawn down to the lower edge, thus partially removing the solution from the back. It is then clamped to the lower edge. In this manner, says the *Photographische Archiv*, a sheet of paper five feet long may be sensitized in less time than it takes to describe it. The chromate bath should be kept covered to keep out the dust; and before using it, a piece of blotting paper may be drawn over the surface.

AN IRIS AND AN ORCHID.

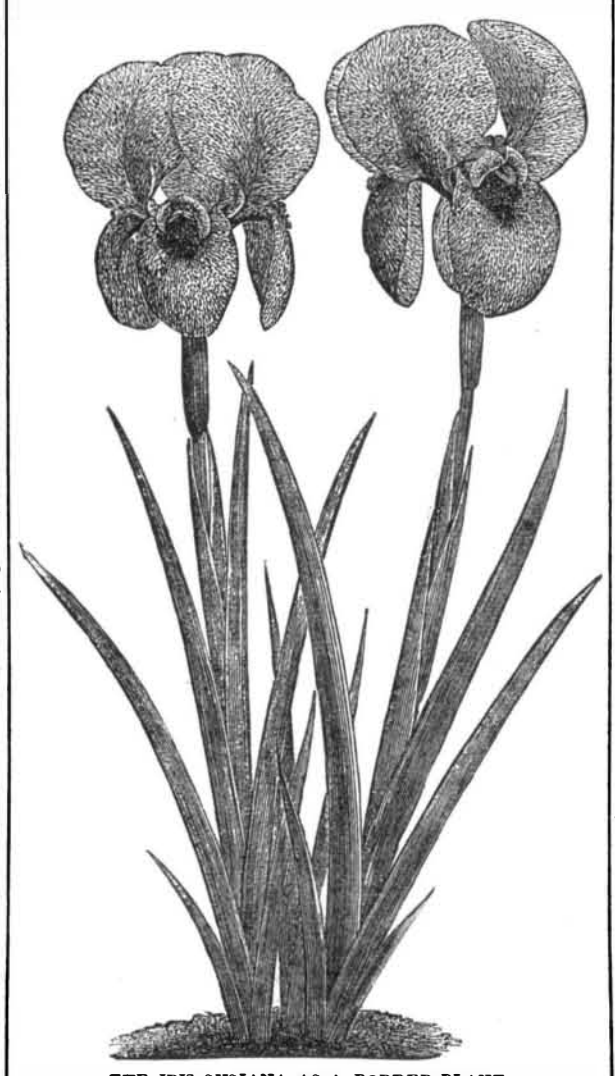
Our first engraving, extracted from *The Garden*, depicts a beautiful specimen of variegated orchid, the leaves of which are richly colored and highly ornamental, while the flowers are quite insignificant. It is indigenous to the East Indian Islands and Continent, and has short rhizomes, very short stems, and alternate leaves, more or less oval in shape, often heart shaped at the base and pointed at the apex, on very short foot stalks, which embrace or clasp the stem. The flowers are arranged in clusters or terminal spikes. They are of a white or reddish color, and are undeserving of notice in an ornamental point of view. The leaves are velvety, of a dark green color round the margins, while the central part is of a yellowish red. The whole of the upper surface is traversed by a network of veinings of a brilliant golden yellow color. The under surface is red. The plant is also known in gardens under the names of *a. xanthophyllus* and *a. latimaculatus*. The plant should be grown in pots, the lower half of which should, for the sake of securing perfect drainage, be filled with broken crocks, while the rest should be filled with a compost of peat, charcoal, and sphagnum,



ANÆCTOCHILUS (XANTHOPHYLLUS) LOBBIANUS.

the surface being covered with a layer of living sphagnum. The plants, after being potted, should be placed under a bell glass or *cloche*, in a warm house, where the temperature during summer should range from 70° to 78° Fah., and in winter from 55° to 60° Fah. A moist atmosphere is indispensable, and this should be maintained equally and constantly during the summer; but in winter, when the plants require some rest, the supply of moisture should be considerably diminished. The plants should at all times be kept well sheltered from the direct rays of the sun, and the inside of the bell glass or *cloche*, under which they are placed, should be carefully wiped out every morning and evening, otherwise the condensed moisture, accumulating on the glass, will drip on to the leaves, making holes wherever it touches. As the principal object in cultivating these plants is to bring the foliage to its full perfection of beauty, the flowers should be pinched off as soon as they begin to appear. This will throw more vigor into the leaves, cause them to grow closer together, and vastly improve the luster and richness of the coloring. It is also favorable to the multiplication of the plant, as it causes numerous shoots to spring from the axils of the lower leaves, and also from the rhizome. These shoots, when detached and planted, will form each a new plant. They should, of course, be potted in the same compost, and subjected to the same treatment which has been above described for full grown plants.

The plants of the *iris* family, of which the *iris susiana*,



THE IRIS SUSIANA AS A BORDER PLANT.

represented in the second of the two engravings given herewith, is a very beautiful variety, exist both in the temperate and torrid regions of the globe. There are several species similar to that in our illustration, having bulbous roots or stems, and exquisitely scented blossoms of an elegant pearl white hue. Almost every variety of the flower has some intrinsic value—the root of one species is the orris root sold by apothecaries; the powdered root of another gives a kind of snuff; the same powder of another variety may be used for making ink; and the fresh juice of other species is said to be a valuable cathartic medicine.

Hypodermic Medication.

The day that Alexander Wood, of Edinburgh, discovered "that a solution of morphia injected under the skin, in the vicinity of a painful part, afforded remarkable relief to the pain," the clock of ages marked an epoch in scientific medicine, which indeed rivals Harvey's discovery of the circulation, or Morton's discovery of anæsthesia. At that hour, throughout the civilized world, suffering humanity became heirs to a boon which has been to them as a pearl of price, and that particular province in the practice of medicine which looks to the alleviation of pain, which in times gone by was the bane of the physician's life, became so modified that pain presents but a few phases that we may not readily overcome, and but few characters we may not subdue. Such crises in medicine as have been wrought by the discoveries of Jenner, Cinchon, Harvey, Morton, and Wood are precursors of glorious "gala days" in their departments, and command the admiration and respect of not our profession alone, but the good and noble the world over.

Dr. Wood, after his discovery, continued to practise the method from November, 1843, to 1856, a period of thirteen years, and until he became thoroughly convinced of its utility and worth, when he published his first account of the subject in the Edinburgh *Medical and Surgical Journal*—now over thirty years ago.

I have known the hypodermic syringe to be employed almost in every available portion of the body, and on an average of four times in twenty-four hours, for a period of several years, in the same patient, making an aggregate of six thousand and four hundred times, without the slightest accident and without even the formation of an abscess.

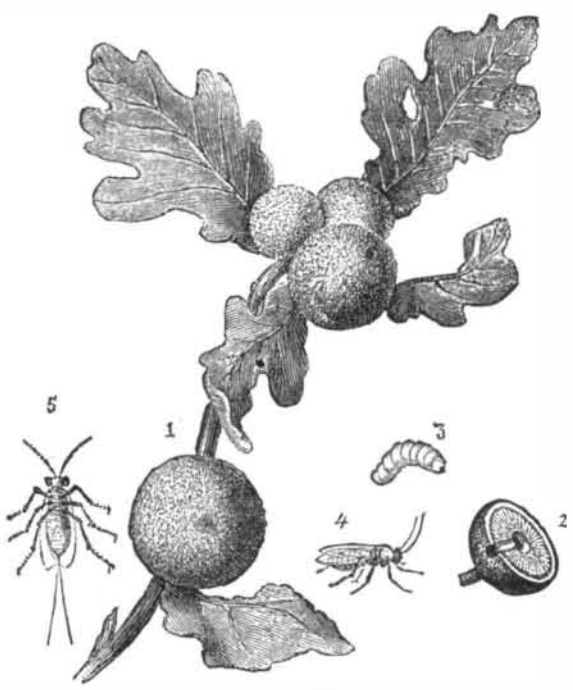
My own method of using the hypodermic syringe is as follows: After being satisfied that the instrument is in perfect order, the piston properly fitted, the barrel clean, etc., I draw up slightly more fluid than I design using, invert the syringe, press up the piston to expel the air which is nearly always drawn in, and the surplus solution; then with the thumb and finger of the left hand, I pinch up a fold of integument, pressing it pretty firmly for a few seconds, to lessen its sensibility; with a firm, steady pressure I introduce the needle at an angle of about 45°, directly into the cellular tissue, to the depth of one eighth to a quarter of an inch, according to circumstances; press down the piston, withdraw the needle quickly, place a finger over the puncture to prevent the escape of fluid, and the operation is complete.

The first drug employed hypodermically was morphia. And its range of application has kept pace, co-extensive with its employment. While its various salts have been used, the sulphate seems to have outgrown all others in favor, for various reasons, and is at present the favorite; it is perfectly soluble in distilled water, which is, for all purposes and under most circumstances, the very best vehicle for hypodermic use, on account of being perfectly unirritating to the tissues and not liable to produce inflammation or abscess.

The physiological effects of morphia are too well understood to require repetition here. It was early—in fact, first—employed in neuralgia, in which a single application cured the disease. It had yielded equally as good results in my own hands a number of times; and although we will often fail to cure so promptly, by perseverence, for a limited time even, we will be satisfied with its results. At present, I cannot call to mind a single case of ordinary neuralgia which I have treated hypodermically that was not speedily and, so far as I know, permanently cured by a few applications.—*J. C. Bishop, M. D, in Southern Medical Record.*

OAK APPLES OR GALLS.

These, says the *Garden*, are produced by an insect known to entomologists under the name of *cynips quercus-petioli*, which deposits its eggs in the tender bark of the young twigs of the oak. Soon afterwards the portion of the bark in which an egg has been deposited begins to swell, and ultimately forms a rounded tumor or excrescence, sometimes over an inch in diameter. "On cutting into these galls," says Dr. Fitch, "the small limb on which they grow is found to have its wood thickened or swollen, and, over it, forming the chief bulk of the tumor, is a corky substance of a yellowish brown or snuff color, between which and the wood are several small hard grains (resembling seeds, each having a cavity in its center), in which, doubled together, lies a soft, white, footless worm or maggot. This, on completing its growth, changes to a pupa in the same cell, and, subsequently, into a fly; whereupon, to escape from its confinement, it gnaws through the corky substance and the external bark, thus producing those small perforations like pin holes, which are always seen in these tumors after the insects have made their exit therefrom." Fig. 2 in our illustration represents a section of one of these galls cut through the middle, and showing the central cavity in which the grub grew to maturity, prior to eating its way to the outside, through the channel which is also shown. The injury done to oak plantations by these insects is sometimes very great. A few years since they appeared in such numbers in England as to create quite a panic among the landowners, who were threatened with the entire loss of their oak plantations Some of the trees withered and died, others had their leading shoots killed, while the younger trees were seriously checked in their growth. There is another species of cynips which deposits its eggs in the same manner in the leaves of the oak, causing them to swell similarly. The tumors, however, pro-



OAK GALLS

duced by this insect are soft and much smaller than the bark galls. In both cases it is probable that the parent insect, when depositing her eggs, injects with each a small quantity of some acrid secretion which has a specific effect in so irritating the tissues of the bark or leaf that they at once commence to swell and produce the spherical induration which forms the *nidus* of the future larva.

Fig. 1 shows the oak gall in its natural size, and Fig. 2 is a section of the same. Figs. 3, 4, and 5 are, respectively the larva, male and female of the cynips.