The mill we have described was designed for the crushing of linseed only, but with slight modifications in the crushing machinery the system is suitable for all other kinds of oil-producing seeds, such as cotton seed, etc. etc., and about twenty mills in England and abroad are now working successfully on this plan.—*The Engineer*.

REDUCTION OF OVER-PRINTED PROOFS.

By W. ENGLAND.

A SIMPLE and certain method of reducing over-printed proofs has been one of the wants long felt by all photographers. It is well known that in every photographic establishment, even the most careful printers cannot always be sure of getting the exact depth of tone required and proofs occasionally get over-printed. Of course, prevention is better than cure; but when a remedy is necessary, the method I am about to describe answers admirably.

I tried a great many experiments before I succeeded to my satisfaction. I found that cyanide of potassium totally destroyed the print, even when used moderately strong. By using a weaker solution it was well under control, and the exact depth could be readily obtained; but, during the washing to remove the cyanide, the action of the latter continued, and spoiled every proof. I then tried several methods to arrest the action of the cyanide, but without success. It then occurred to me to use the cyanide in such a weak state that but little should be held in the paper, only sufficient to reduce the print to the required depth. For this purpose I made a bath of only four drops of saturated solution of cyanide to a pint of water. The prints immersed at first showed no signs of getting lighter; but after about an hour the most perfect results had been obtained with prints considerably over-printed. With lighter pictures a less time is required. Proofs treated in this way lose nothing of their tone during the after-washing, which should be thoroughly done, and, when dry, retain all the brilliancy of an ordinary print. I inclose you a proof, one half treated in the way described.—*Photo. Journal*.

TO TAKE POSITIVES IN THE CAMERA DIRECT.

By J. B. OBERNETTER.*

ACCORDING to my experience, the best results are most conveniently obtained by employing collodio-bromide of silver emulsion. For the benefit of those who have not a good collodion emulsion at hand, I give below a formula for making one, by the aid of which very excellent collodio-bromide plates may be prepared. Gelatine emulsion can only be used with advantage when it contains the smallest possible proportion of gelatine, and provided the plates are quite evenly coated; even then, those parts which in a positive should be quite clear and glassy, always show a yellowish tint, due to the action of the developer in reducing the silver bromide. The new emulsion of Dr. Vogel behaves in exactly the same way as one of pure gelatine.

When a positive is to be taken, the exposure must on no account be too short. A developer must be selected which is best adapted for use with the particular kind of emulsion employed: for instance, a collodion emulsion should be developed with bicarbonate of ammonia. The developing must be continued until the silver bromide in the darkest parts has been completely reduced throughout, an effect which may be observed by examining the plate from the back by transmitted light; fog by transmitted light, or on the front side, is of no consequence.

So soon as the development has reached this point, the plates must be thoroughly rinsed in water; a two to three per cent. solution of chromic acid is then flowed over them. The bromide that has been reduced to metallic silver is by this means rapidly converted into silver chromate, as will be at once recognized by the well-known intensely red color where the conversion has been completely carried into effect. This chromate must not be entirely removed, which may be done by washing the plate in a little water, and then in a very dilute solution of ammonia. Those parts which were at first opaque and afterwards of a red color, will now be seen to be perfectly transparent like clear glass, and the other parts will be more or less transparent in proportion to the quantity of silver bromide reduced. The result is a positive image in white silver bromide; to blacken this it must be taken into the daylight and laid in any dilute developing solution. The bicarbonate of ammonia developer gives a particularly good tone, that of Dr. Eder rather a gray one. We may continue the reduction of the bromide until every particle of it is reduced, and then we shall get the greatest depth; but we have it in our power, by interrupting the reducing process at any particular point, to produce a soft or hard positive. Finally, the image is fixed with sodium hyposulphite. This method is very advantageous for obtaining inverted negatives for collotypes from ordinary negatives, either in the same size, or of enlarged or reduced dimensions.

I now proceed to give directions for preparing collodio-bromide dry plates, which are not only especially well adapted for the above purpose, but which, from their great purity, fineness of grain, and reliability, can also be used with advantage in many other cases. Their sensitiveness is slight, so that they require about six times as long an exposure as a wet plate. But this very circumstance adds to the convenience and certainty in working with them, as any dark room fit for the collodion process will serve in this case. A little experience shows that great sensitiveness is often a secondary consideration, and that, in many cases, some other special quality is of greater importance.

Collodion.—Zinc bromide, 5 grains, dissolved in 200 grammes alcohol, mixed with 5 grammes pyroxyline, and 200 grammes ether. When completely dissolved, let the solution settle for two or three days, and the collodion is ready for use.

Silver Bath.—Silver nitrate, 14 grammes, dissolved in 100 grammes water, and acidulated with a few drops of silver nitrate.

Developer.—Composed of the three following solutions:

A.—Crystals of ammonium bicarbonate 25 grammes, dissolved in 100 grammes of water.

B.—Potassium bromide, 10 grains in 100 grammes water.

C.—Pyrogallol acid, 10 grammes in 100 grammes water.

Preservative.—Equal parts of beer and water heated till the mixture ceases to froth, and filtered.

The above are the requisite materials. A polished glass plate is coated with the collodion, and silvered in the bath as in the usual way, and then well washed in water. After washing the plate is laid for a couple of minutes in a three per cent. solution of potassium bromide, and again washed in water. After this second washing the preservative is flowed over it twice, and the plate then placed in a vertical

position to dry. The developing solution must be prepared just before using, by mixing 100 cub. centim. of the A (bicarbonate of ammonia) solution, 2 or 3 cub. centim. of the B (potassium bromide) solution, and 3 cub. centim. of the C (pyrogallol acid) solution. If the operator be in the habit of working with an iodized collodion, rich in bromide, he can use it for this process in conjunction with the ordinary silver bath; but after washing, the plate must be laid in a five per cent. solution of potassium bromide. The preservative and developer are employed as directed above, and good results will be obtained by this means.

AN ELECTRICAL SPEECH-RECORDER.

A CURIOUS piece of apparatus, not likely to be of practical use, but showing considerable ingenuity, has been devised by M. Amadeo Gentilli, of Leipsic, for the purpose of giving an intelligible record of speech. The natural movements of the mouth in speaking are employed to produce through delicate levers a series of electric contacts, and thereby sundry combinations of signs on a moving band of paper, similar to those of the Morse alphabet. The transmitting portion of the apparatus is based on a careful study of the motion of lips and tongue in speaking with an object held between the teeth. The working parts are mainly arranged on an ebonite plate, from one end of which projects a piece to be taken between the teeth, whereupon the mouth-levers come into position. The nasal puff in sounding *m* and *n* affects a special delicate organ. There are eight electro-magnets in the receiver, each of which, when actuated by a current, causes a line to be formed on the paper. It is mentioned by M. Guerout (who describes the apparatus in *La Lumière Electrique*) that the letters *g* and *k*, *d* and *t*, *b* and *p*, *f*, *v*, and *w*, which are produced by movements very slightly different, are represented by the same signs. Thus of these letters the alphabet comprises only *g*, *t*, *b*, and *f*. Further, *c*, *z*, and *x* are represented by *ts* and *gs*. The apparatus will, perhaps, be shown at the forthcoming Exhibition in Paris.

THE ROMAN VILLA NEAR BRADING.

THE second edition of the "Guide to the Roman Villa, recently discovered at Morton, between Sandown and Brading, Isle of Wight," which has been drawn up by the excavators of the buildings, Messrs. John E. Price, F.S.A., and F. G. Hilton Price, F.G.S., contains an account of nineteen chambers which had been laid bare up to the time of its issue.

During the last few weeks these gentlemen have uncovered a dozen more chambers, making thirty-one in all. Of the twelve just brought to light two are of large size, one of them measuring 54 ft. by 22 ft. It had pillars on two sides to support the roof placed against the walls, as the discoverers found large blocks of stone and concrete which formed the foundations.

There were smaller chambers flanking on either side this very large one. Continuing due east, and joining the last named, is another room nearly 40 ft. long by 32 ft. broad; and on the south and east sides of it are more solid blocks of concrete at equal intervals. On the north side, at a distance of eight feet from the north wall, are three of these blocks, corresponding with those on the south side. Seemingly, this chamber was approached from the east through a vestibule, since at regular distances four more blocks occur which likewise correspond with those opposite. Comparatively few remains beyond roofing slabs, bits of pottery, and a quantity of bronze, consisting of a lock-plate and studs for the ornamentation of a chest, were discovered in these large chambers.

Another interesting feature which yet remains, however, to be worked out, is the appearance of a roadway.

Adjoining the wall of the last-mentioned chamber is a well-house, with two semicircular apses. The well itself has been sunk to a depth of 80 ft., and water has been found, still the bottom has not been reached as yet. In excavating it a large quantity of bones of the horse, ox, sheep, dog, and pig were met with, as well as fragments of pottery in masses and stones.

Southward of the supposed roadway, which runs by the side of the outer wall, is a large open space. From the fineness of the soil it is supposed to have been the garden, and upon its western side is the foundation of an alcove or hemicycle.

An interesting chamber, nearly square, and resting on a solid foundation, has been discovered on Mrs. Munns' side of the site. This room yielded a bracelet in bronze, a fibula, and a considerable number of coins. These last range in date from Domitian (A.D. 81-96) to Valentinian (A.D. 383-392). Every effort, says the *London Times*, is now being made to bring about an amalgamation of the excavations which cover two separate freeholds, one belonging to Mrs. Munns and the other to Lady Oglander.

THE RUINS OF LIBYDIA.

CAPT. GEORGE S. PRATT, of the steamship *Lady Lycett*, during a recent trip to North Africa, visited the site of the ancient city of Libya, which he found partly buried in a sea of sand. The captain says:

"This must have been a city of great splendor ages ago. Heaps of massive marble pillars of blue, white, and red, in all positions, are scattered about and beautifully carved round the top and base. There were also some very large pillars of granite in a good state of preservation showing a fine polish. Statues are lying about, some with their heads and other portions broken off.

"A part of the city walls are standing arched, and arched gateways or entrances to the city are also standing in three places, two sides and one top; others buried in the sand. There are many massive pillars of blue marble, say fifty feet long, and having a circumference of eighteen feet, lying washed by the sea—for a portion of the city is under the sea. On the south side of the city was evidently the port and river, but which is now transformed into a valley the entrance to which has grown up level with the seashore. One immense portion of a fortress has broken in two and fallen into the valley or ancient port.

"There appears to be an outer town with old ruins of a fortress which, I suppose, was to protect the port. The fortresses are mostly built of red tile or brick, six inches square, a specimen of which I have on board. This outer town has on the south side of the river arched vaults resembling catacombs, where the dead were buried. The ancient people who inhabited this city appear to have made their coffins of strong earthenware of red color. The sea having washed up to them and broken them, the bones are to be seen inside.

"This must have been a cemetery, the more wealthy class being buried in the catacombs.

"I once visited some ancient catacombs, and I am convinced that the living relatives of the dead dwelt in them. The stones with which they ground their grain for food and hearths where they cooked were still visible.

"Tradition states that people sometimes went into the catacombs, wandered about until they were lost and were never afterward seen. I noticed air shafts for ventilation, and places cut out where the dead were laid and where the wanderers burnt their oil for light.

"On the top of two mountains, north and south of the city, are ancient ruins of forts which were placed there to protect the city of Libya from inland invasion.

"In conversation with an Arab, he said:

"I ride for hours on horseback, and see neither man nor habitation; those we do see are great robbers."

"This country once contested with Rome for the power of the world. The whole country possesses all the advantages of soil and climate that man needs desire. The soil will yield most bountifully if tilled. Mohammedism in its uttermost degree of personal indulgence and wantonness of power, restrains all rational and social advancements.

"The inhabitants are in poverty and ignorance, and it is not safe to go out of the town unarmed. The sand in the ruins of Libya is full of marine shells, so it must have been destroyed by an earthquake, the sea overrunning the city and receding back, leaving the deposit of sand and shells. No warfare could have scattered those immense pillars of marble in the directions they now lie.

THE NIOBRARA GROUP.

By CHAS. H. STERNBERG.

THE rocks of Cretaceous No. 3, or Niobrara Group, consist of an upper stratum of red, yellow, or white chalk, underlain by great beds of blue shale. There is no paleontological difference between the strata, as the same animal remains are found in both. These beds are of great value to science, as they contain the remains of animals that once inhabited the Cretaceous ocean. Perfect skeletons are found of huge saurians, eighty feet in length. What a field for the imagination of the student, to people the old Cretaceous seas with animals restored from their buried relics! I now in imagination walk the old Cretaceous beach; I hear the rush of mighty rivers, as, laden with the debris of the carboniferous hills, they pour into the ocean, depositing their loads of soft mud that is to cover and preserve the remains of animals living in these waters. Far out at sea, I "observe a huge snake-like animal, with head erect, full twenty feet in air, gazing into the depths below." The fish that meets his eye will soon fall a victim to his voracious appetite. Another monster of the deep grandly exposes a length of eighty feet; as he lies stretched on the waters an enemy in the distance attracts his attention and he prepares to offer battle; his four powerful paddles begin to work, and that vast mass of animal life commences slowly to move; gradually it gains more speed as the paddles move more rapidly; his huge tail, acting like a screw propeller of some steamboat, augments his speed and guides him toward his prey. The water boils behind him. It matters not how large the animal may be that he means to attack, if once it receives a stroke from the powerful bony snout of our saurian (for he means to use it as a battering ram), it will lie a crushed and helpless mass upon the surface and the bubbling waters will suck it in; on the bottom of the ocean it will be dragged hither and thither by sharks and other rapacious fishes which will have many a dainty feast from its body. The soft mud of the ocean's bed will at last cover and bury the skeleton and preserve it for ages; future explorers will gather up and admire the finely marked bones for the attachment of muscles. A fleet of smaller saurians heave in sight; they twine their long delicate necks together or dive beneath the surface for some luckless fish, which, on again appearing, they hold in their long glistening teeth. "The air is darkened by great flying saurians that flap their leathery wings over the deep," or dive in pursuit of prey. As evening approaches they flock to the shore and suspend themselves by their claw-armed fingers to the cliffs. Wandering along the shore, I find that a huge fish, twenty feet in length, has become entangled in the shifting sands of a shallow bay. It seems to be in agony, and, seeking the cause, I find it has been pierced by the long bony snout of some smaller fish that uses this weapon as the sword-fish of modern oceans does his sword. The beach is strewn with large oyster-like shells, twenty-seven inches in diameter. "They seem to be the remains of a feast of some titanic race."

As the explorer approaches the beds of the Niobrara Group, he often sees in the distance a city of imposing grandeur. Wide streets, lined with buildings of dazzling whiteness, meet his eye, and only a near approach will convince him that he is looking at nature's handiwork. The rains of ages have cut and fashioned the soft limestone into the semblance of cities. The shale beds of this formation contain great quantities of the salts of soda and magnesia, and the waters flowing from or through these beds are strongly impregnated with "alkali." They also contain iron pyrites and gypsum. I have often, while wandering along some wash (where the chalk and shale have been denuded), found some fossil bones scattered along, and by following them up to where bones project from bluff or bank, I find I have stumbled upon the burial ground of a denizen of the ancient Cretaceous seas. Perhaps it is a species of *Leiodon* and reaches a length of eighty feet. Its long teeth glisten in the sunlight, and its powerful paddles reach far in the bluffs on either side, requiring days of toil to lay them bare. The great bony snout (the characteristic of all his race), which, with other peculiarities, places him in Cope's new suborder of *Pythonomorpha*, lies pointing heavenward. I find that he is without an expansible gullet, as in modern serpents; another method of swallowing his food whole is given him, as without it he could not exist, as he has no teeth for masticating, and I find that the jaws are provided with a set of hinges, of ball and socket pattern, just back of the dentary bone. He is thus enabled to expand the cavity of the mouth. All now that was necessary to allow the passage of large morsels into the stomach, was a loose, baggy, pelican like throat, with which he was doubtless provided. His teeth were long and conical, slightly recurved; his head long and conical, with eyes directed upward. He, perhaps, had the faculty of flattening his head like the python. One peculiarity of the order is found in the quadrate bones, which not only places him in the rank of reptiles, but enables the student to distinguish from it the different species. In shape this bone resembles the external ear of a man, and is composed of the bones that help make up the internal ear in mammals. This bone connects the under jaw with the skull and allows all the motion necessary. His tongue was long

* *Deutsche Photographen Zeitung*.

and forked, like a serpent's, and was thrust out while in motion. The only noise he could make was a hissing sound. While at rest, "the tongue was concealed in a sack under the windpipe." *Leiodon proriger*, Cope, reached a length of eighty feet; it had a long slender neck, twenty feet in length; the tail was long and powerful, and was doubtless used both as a rudder and propeller. *Chidastes tortor* was an elegant creature, about forty feet in length; its vertebral column was provided with an additional set of articulations, so as to enable it to coil itself like a snake; this seems to be its favorite position, as I have often found it thus coiled.

Chidastes pumilus, Marsh, was a little creature, ten or fifteen feet long, and doubtless often fell a victim to the larger saurians or rapacious fishes with which the cretaceous seas abounded. The Pterodactyls of the Niobrara differed very much from those of Europe; they were much larger; I have found them with an expanse of wing of twenty-five feet; they were also without teeth, and Marsh has made the new genus *Pteradon* for them. One peculiarity of the Niobrara Group is the presence of the only known birds armed with teeth.

Ichthyornis dispar, Marsh, was a bird six feet in height; it was armed with long sharp teeth; the wings were poorly developed; they were swimmers and lived on fishes. Other birds are found no larger than a dove; they are arranged in families according to the position of the teeth, which are placed either in grooves or sockets. Believers in the evolution theory have received the discoveries of reptile-like birds as a positive proof that they have descended from reptiles. Of all the strange animal forms found in the rich fossiliferous beds of Western Kansas, I think Cope's *Protostega gigas*, or marine tortoise, is the most unique. Cope calls them the boatmen of the cretaceous ocean.

In 1877 I discovered a specimen that measured twenty feet from one flipper to the other; the distance between the condyles of the lower jaws was eighteen inches. We know that in modern turtles the young, when first hatched, have free ribs like other animals, and that in process of growth, bone is deposited in the skin, the rib expands and unite in connection with the breastbone, forming a perfect shell or house. This is not the case in *Protostega*; in the adult the ribs are free, and, in place of a shell, these animals are provided with great dermal plates, two feet in diameter, an inch thick in the center and beveled off to a thin figured margin. When Prof. Cope discovered this animal, he was confident he had found a young turtle, but it was impossible to believe that an animal measuring twenty feet from flipper to flipper had just been hatched, and on studying the bones he was forced to conclude that it was a full grown animal, and to be one of those miniature types that is often found in the geological strata—another fact taken by many to prove that animals of the present day have been derived from more imperfect species, which, by process of growth, have obtained the perfect condition in which we find them.

Great oyster-like shells are found in the Niobrara called by Conrad, *Haploscapha*. They often measure twenty-seven inches in diameter and are usually covered with small oyster shells, *Ostrea congesta*. Among fishes the first resembling our common edible species are found. The species that leads them all in point of size and ferocity is Cope's *Porthoeus*.

P. molossus was twenty feet in length. It was provided with a huge bulldog shaped head with fangs projecting from the mouth four inches. The roof of the mouth and lower jaws were covered with teeth irregular in size—some long and conical as the ones mentioned; others much shorter. These huge fishes were also provided with other means of defense or attack in the shape of great bony spines, with one edge enameled, that, even in their fossilized forms, are hard and sharp enough to be used in cutting wood. In some species one edge is toothed. They are often three feet in length and are made up of bundles of rods which terminate in the sharp teeth of some species, or are beveled down to make the sharp edges of others. I have no doubt but that these enormous fishes would not hesitate to attack their neighbors the saurians. They were certainly well provided with weapons, for, in addition to the ones mentioned, their tails were forked and made up of bundles of hard bony rods, and, I imagine, a blow from this would disable an antagonist easily. Another peculiar species found in Western Kansas is the snout fish, or Cope's *Eriotheus*. Though small, not over five or six feet in length, its bony snout, six or eight inches in length, must have proved a terrible weapon. I discovered three new species of this genus in 1877. We have also the *Enechodus*, a fish with teeth, one on each premaxilla, that were shaped like the incisors of a beaver. Sharks abounded; I have often found their flat coin-like vertebrae and delicate serrate edged teeth. One species of this family are provided with teeth covering the roof and floor of the mouth, which were doubtless used as a mill for grinding up food. Some beautiful cruroids were found by Prof. Mudge's party in the rocks of this formation. A company has been organized at Trego, Kan., for the purpose of utilizing the chalk by making waterproof cement—said to be equal to the best Portland cement. Great quantities of iron pyrites and gypsum are found. The rocks are of little value for building purposes, although it has been used in making the buildings at Fort Wallace, with the belief that they would harden when exposed to the atmosphere, but they are as soft now as when the buildings were first made. Near Wallace, however, builders can draw from the conglomerates of the Loup Fork Group, which are found on the high lands near by.

I am greatly indebted to Prof. E. D. Cope's Cretaceous Fauna, from which I have drawn largely in the preparation of this paper, as I could obtain many facts from no other source. I hope he will pardon the use of some of his descriptions.—*Kansas City Review*.

THE GEOLOGY OF FLORIDA.

PROF. E. A. SMITH, of Alabama, traces the geological history of the peninsula of Florida as follows:

(1.) Since no rocks have been found in Florida older than the Vicksburg limestone, it follows that, until the end of the Eocene period, this part of our country had not yet been added to the firm land of the continent, but was still submerged.

(2.) During the period of disturbance which followed the deposition of the Vicksburg limestone, Florida was elevated nearly to its present height above the sea-level, which elevation was maintained without material interruption until the Champlain period.

(3.) In this upward movement the axis of elevation did not coincide with the present main dividing ridge of the peninsula, but lay considerably to the westward, probably occupying the position very nearly of the western coast of today.

(4.) After the Miocene (or possibly the Pliocene) period,

there was again an elevation of Florida, as is shown by the presence of a Miocene limestone on the eastern slope of the peninsula, some distance (not less than thirty feet) above present sea-level.

(5.) We have evidence in the distribution of the beds of the Champlain period (stratified drift, or orange sand) that Florida and parts of the adjacent States were during this time submerged sufficiently to allow the deposition over them of a mass of pebbles, sand, and clay, varying in thickness from a few feet to two hundred.

From the peculiar mode of stratification of most of these beds, it is concluded, with reason, that they were sediments from rapidly flowing, ever-varying currents. In the northern part of the State, the beds of yellow and red loam lie directly upon the stratified drift. These beds of loam are devoid of stratified structure as well as of fossils, and were probably deposited from slowly running or nearly stagnant waters.

(6.) Following the submergence during the Champlain period was a re-elevation, which brought up the peninsula with approximately its present configuration.

FRUIT SIRUPS.*

By ADOLPH G. VOGELER, Ph.G., Chicago.

ALREADY largely prescribed by practitioners in the United States, sirup of raspberry constitutes a most pleasant addition to many medicines, especially those containing mineral acids. In many compounds it cannot be advantageously replaced by any other corrective, owing to its agreeable aroma. This sirup is particularly adapted for saline antifebrile mixtures, or for potions otherwise insipid, as for instance solutions of pepsin, lactopeptin, etc., while it is also desirable for preparing cooling draughts for the patient.

Strawberries, mulberries, and black cherries may be mentioned as yielding palatable sirups, but in no wise equal to that of raspberries.

The preparation of the sirup may be accomplished in two ways: either the juice is expressed from the fruit and then combined with sugar; or the unimpaired berries are mixed with sugar, when the latter will extract the juice, leaving the berry shriveled and tasteless. Owing to the circumstance that practically but two months would have been at my disposal for comparative experiments, I refrained from endeavoring to determine the most preferable method of making fruit sirups (two years would be short allowance for such a purpose), and shall for that reason only enumerate various methods as compiled from different sources. I wish to remark, however, that I should give preference to the process as exemplified by the German Pharmacopœia, modified by an addition of five per cent. of alcohol to the confused berries previous to fermentation (process No. 2). Pectin in this manner will separate more rapidly, while the juice is less liable to deteriorate. It may be found best to direct the pure filtered juice to be preserved by means of Appert's process, and to have the sirup prepared for this in small quantities for actual use only. The raspberry sirup as found in the market is quite a thin fluid, keeping indefinitely, from which I infer that it contains an appreciable amount of alcohol. According to my personal experience fruit sirups will undergo fermentation if exposed in shelf-bottles; if then the presence of a specified percentage of alcohol will preserve the same, I can see no valid objection to its introduction. Before proceeding to enumerate the different processes for making fruit sirups or juices, a test for distinguishing natural sirup of raspberry from a spurious article may not be out of order. I copy from "Handbuch der Pharmaceutischen Praxis," ii., pp. 830, 831.

Test for Sirup of Raspberry.—a. Mix equal volumes of the sirup and of ammonia 10 per cent. The color of true sirup changes to violet with a slight tinge of green. If, however, the color changes instantly or soon to green or yellow, some foreign vegetable coloring matter is present; and if it should become colorless or nearly so, it is adulterated with rosaniline.

b. If the sirup is colored with red aniline the latter may be detected by macerating it in some white silk or wool, and rinsing the cloth in water. Water removes the raspberry stain, but not the aniline. If the fabric be dipped in ammonia the aniline dye will vanish, but reappear on moistening with acetic acid.

Sirup of Raspberry.—1. Contuse the berries, place them in a vat, add 2 per cent. of sugar, and ferment the mass at a temperature of between 70° and 80° F. for three or four days until all pectin has separated and no more signs of fermentation are visible. Then express the juice, which allow to settle in a cool place for two days, decant carefully from the pulverulent pectin, and filter. Preserve the juice by Appert's process (see the *Druggists Circular*, 1878, p. 61), or convert into sirup by dissolving in 5 parts of the clarified juice 9 parts of sugar, and heating to the boiling-point.—"Handb. d. Pharm. Praxis," i., p. 796.

2. A better and safer way is to add at once to the freshly bruised fruit 5 to 6 per cent. of alcohol, and then proceed as in the foregoing. This formula would seem to deserve preference.—*D. C.*, 1880, p. 99.

3. Crush the raspberries in a glass vessel with a wooden pestle to a pulp, add to it 5 to 10 per cent. of cane or grape sugar, and allow the whole to stand, stirring occasionally. When the mass ferments the juice becomes clear; it may then be filtered and bottled, or converted into sirup.—*D. C.*, 1873, p. 130.

4. Put 6 pounds of raspberries into a china bowl, with a quart of water in which has been dissolved 2½ ounces of citric acid, and let it remain twenty-four hours; then strain, taking care not to bruise the fruit. To each pint of clear liquid add 1½ pounds of sugar, and stir until it is dissolved.—*D. C.*, 1872, p. 128.

5. Proceed as in No. 1. When the fermentation is nearly ended (indicated by the appearance of a small yellow fly) express the juice, add to every pound of the latter 1 ounce of deodorized alcohol, set aside for one night, and then filter. Bottle the juice, or convert into sirup.—*D. C.*, 1878, p. 109.

6. Macerate the berries in layers interspersed with sugar, 1¾ pounds of sugar to 1 pound of berries, for twenty-four hours in a cool cellar, and then drain off the juice. Preserve the sirup by means of Appert's process.—Parrish's "Pharmacy," p. 264.

7. Add to the foregoing product some alcohol, or a little

* From a paper read before the American Pharmaceutical Association. From the "Transactions."

bisulphite of lime. The flavor is not supposed to be impaired by the latter.—*D. C.*, 1870, p. 43.

8. Pure fruit juice, 16 fluid ounces; dilute acetic acid, 1 fluid ounce; water, 7 fluid ounces; granulated sugar, 3 pounds. Dissolve the sugar without heat. Preserve in air-tight vessels in a cool place. The acetic acid is objectionable.—*D. C.*, 1874, p. 208.

Sirup of Mulberry.—Mulberry juice, 1 pint imp.; sugar, 2 pounds; rect. spirit, 2½ fluid ounces. Heat the juice to the boiling-point, and when it has cooled filter it. Dissolve the sugar in the filtered liquid with a gentle heat, and add the spirit.—*B. P.*

Sirup of Strawberry.—Put 2 parts of strawberries deprived of the calyx, without crushing them, into a large-mouthed jar; add to them 2½ parts of sugar, and frequently shake, keeping the vessel in a cool place. The sugar absorbs the juice, leaving the fruit shriveled and tasteless, the latter being removed by means of a strainer without pressure. Mix the clear sirup with 20 per cent. of alcohol. (Source some German journal.) I have made sirups of strawberry and of pineapple in this way for soda-water, not adding any alcohol, but I bottled it as soon as made. These sirups were excellent, and I have kept some of them for three years without change, only that a slight sediment would form, which was easily separated. But this sirup will spoil as soon as exposed to the air, except when kept on ice. The above addition of alcohol overcomes this defect.

Sirup of Cherry.—Employ the black, sour variety. Crush the cherries, together with the stones, and follow the directions given in No. 2.

Fruit Sirup for Lemonade.—Raspberries, 1,000 grammes; blackberries, 500; bilberries, 500; lemon, 3 fruits. Mash in a stone mortar, and add of cold water, 1,500. Let stand for three days, or until fermentation has finished. Express and filter. In every 2,500 dissolve citric acid, 40; and sugar, 4,500. Boil up once in a copper kettle.—"Handb. d. Pharm. Praxis," ii., p. 831.

ARE WE RIGHT SIGHTED?

In the number of the *Medical Record* for March 19, the following experiment, made by the editor of the *Louisville Medical News*, is given:

"As you sit in your chair, point to any object across the room with both eyes open and no attempt at 'sighting.' Close the left eye and you will find you are still accurately on the object, but close the right eye and you will discover with your present vision you are pointing clear over to the right, provided you are right handed."

In trying this, the finger or pencil appears double that is used to point at the object. In the case where the right eye sights, the direct or true pointer is to the left. The one to the right is seen by the left eye and is off the mark. This is reversed when the left eye does the work.

From such experiments it has been asserted that binocular vision does not exist.

Any one who has any doubts on the subject of binocular vision can be convinced by experimenting fifteen minutes with a stereoscope, provided he does not squint and has fair vision in each eye.

Although we have binocular vision, it does not of necessity follow that both eyes do an alike amount of work. That we use one eye for sighting, pointing out the direction of any given object, any one can prove for himself; but to prove the unequal use of our eyes is more difficult.

Three years ago, while assisting Dr. H. D. Noyes, I went over with care the records of more than a thousand of his private patients where each eye had been carefully examined and the vision and refraction noted. The general results were as follows: When myopia existed there was a higher degree in the right than in the left eye.

When hyperopia was present there was a less degree in the right than in the left eye, and, *ceteris paribus*, the hyperopia became sooner manifest in the right than in the left eye.

In the hyperopic cases the vision was more acute in the right than in the left eye. In the myopic cases, the vision was almost the same in each eye, taking all degrees into consideration.

In other words, of all the eyes examined, the right was longer in antero-posterior diameter than the left eye, the increase in length being caused by the extra work done by the eye.

The better vision found in the right eye of the hyperopic cases means more use and a higher development. A highly hyperopic eye is an undeveloped one and not best suited for the requirements of our modern civilization. On the other hand, myopia is an outcome of civilization and is a disease due to abuse—overwork. To draw positive conclusions from the examination of two thousand odd eyes, is, to say the least, unscientific.

The inference is, that with binocular vision we use one eye more than its fellow—that one being generally the right eye.—*Peter N. Callan, in Medical Record, New York.*

SAW PALMETTO.

(*Sabel Serratala*.)

WHERE a highly nutritive agent is needed, saw palmetto is indicated. By its peculiar soothing power on the mucous membrane, it induces sleep, relieves the most troublesome cough, promotes expectoration, improves digestion, and increases fat, flesh, and strength. Its sedative and diuretic properties are remarkable. It has been used with benefit in cardiac asthma, phthisis (especially laryngeal phthisis), chronic bronchitis, and dilatation of the bronchial tubes. Its action in catarrhal affections is rapid and permanent. A cold in the head may be abated by two or three doses. Mixed in boiling water and used by inhalation, it has been found very beneficial in chronic ozena. Several years ago, while on a hunting trip in the wilds of Florida, Dr. J. B. Read had his attention drawn to the great fattening properties of the berries and the peculiar quality of the fat of the animals that feed on them. During the summer months in those parts, the supply of food is scanty for such animals as bears, raccoons, opossums, and hogs, and they consequently become very thin. As soon, however, as the palmetto berries begin to ripen, they improve rapidly, and in a few weeks have acquired an enormous quantity of fat, and they become unwieldy and an easy prey to the hunters. This fat, like that of most eating animals, consists principally of olein, and will not make lard. The berries, when dropped into the water, are seized and eaten with avidity by the fishes, and even the natives frequently acquire a taste for the berries and eat them freely.—*Jour. of Mat. Med.*