

WOMEN AS ASTRONOMERS.

FAIR STAR GAZERS WHO HAVE BECOME FAMOUS.

VERY few people are aware that among the observers of the recent eclipse of the sun were at least a dozen women who have attained distinction in astronomy.

These women are employed in connection with the observatories of the great colleges either as computers, photographers of the heavens or as teachers. All the large women's colleges are supplied with observatories with all the latest appliances for the study of the stars. Vassar, Smith, Wellesley, Swarthmore, Bryn Mawr, Mount Holyoke and Radcliffe have observatories, and Barnard, through the courtesy of the observatory department of Columbia, affords women opportunities to study the stars.

It is a fallacy to assume that women can never succeed in the exact sciences. In this country alone many women are making a great success of one of the most exact of all the sciences—that of astronomy, where the variation of a millionth part in a computation or the reversing of a hair's breadth in the adjustment of a delicate instrument is a matter of great import.

Speaking of women's work in astronomy, the average well informed person ought to refer to Caroline Herschel and Maria Mitchell as the only women who have achieved fame in the study of the stars. This is a mistake.

Long ago, when Egypt was writing its history in stone, the records show that women were initiated into the study of astronomy by the priestly scribes in whom all the wisdom of the land was centered. Berenice, after whom a constellation was named and who was the daughter of one of the Ptolemies, is believed to have been an astronomer of ability.

The beautiful and unfortunate Hypatia was an observer of the stars; so was the fascinating Eudocia, empress of Theodosius II. In modern times there was Mary Somerville, whose achievements were so well regarded that the British government granted her an annual pension of £300.

St. Hildegard, the pious abbess of the convent of Mount St. Rupert, near Bingen-on-the-Rhine, published as the result of her investigations a theory of the solar system which antedated that of Copernicus by three centuries.

The stories of the achievements of these women are too numerous to tell.

Miss Clara Muller, Marie Kirchoff, Doreen and Madeline Manfredi, the beautiful and brilliant Marquise du Chastel, Mme. Lepaute, Elisabeth von Hatt, Wilhelmina Boitchev, Minna Wolf and Catherine Scarpellini would put to shame those of many modern

men of science. Caroline Herschel, sister of the great Sir William Herschel, was the discoverer of eight comets and the publisher of seven catalogues of stars and nebulae. Her devotion to her brother was remarkable and in no small degree contributed to his success.

Of the women astronomers Scarpellini of Italy, Mme. Kunkle of Germany, Caroline Herschel of England and Maria Mitchell of America may be classed as the greatest. Scarpellini belonged to a family whose members were eminent in many lines of science. She organized a meteorological station, edited a bulletin, made the first catalogue of meteors observed in Italy and made a study of the influence of the moon on earthquakes. She was an honorary member of many societies of scholars and was awarded a gold medal by the Italian government in honor of her work. A statue to her memory adorns the Campo Verano in Rome.

Maria Mitchell, who for about 20 years held the professorship of astronomy at Vassar, is too well known to require more than passing mention.

If a congress of women professionally interested in astronomy were to be called today, it might number about 100. The University of Harvard has connected with its astronomical department about 19 women who are engaged in making calculations. Mrs. W. P. Fleming is the most eminent of these ladies. She was born in Dundee, Scotland, and in 1873, after her marriage, came to the United States and became one of the computers at Harvard. She is now in the department for the examination of the photographic plates taken with the Draper telescope. She has discovered a number of variable stars and confirmed the discovery of several new stars.

Dr. Dorothea Klumpke of San Francisco is the head of the bureau for the measurement of the plates of the photographic catalogue at the Paris observatory. Her thesis on "The Rings of Saturn" recently obtained for her the degree of doctor of mathematical science from the French university at Sorbonne. Several young women assist Miss Klumpke in her work in the little ivy grown tower in which she makes her calculations. All alone, she sometimes spends a night at the telescope watching the course of the heavenly bodies.

Miss Mary W. Whitney, the head of the astronomical department of Vassar college, is one of the most distinguished of the women astronomers of America. She was the pupil, as she is the successor, of Maria Mitchell. After graduating at Vassar Miss Whitney studied

at Cambridge, Mass., under Professor Benjamin Pierce and at the University of Zurich, Switzerland. In 1880 she became the assistant of Vassar, and Miss Mitchell's retirement succeeded her.

After the regular scholastic duties of the day are over Miss Whitney and her assistants give their time to the observation of the comets and minor planets. The results are published in The Astronomical Journal, Popular Astronomy, Astronomische and Nachrichten. Just at present the Vassar staff is studying stellar photographs and expects soon to publish the result of the investigation, which, as photography forms an important part of modern astronomical work, will be of the utmost importance to science. This work is largely done under Miss Whitney's direction by Miss Caroline Furness, her assistant in the Vassar observatory.

Connected with Wellesley are two able women astronomers. One of these is Miss Sarah F. Whiting, in charge of the department relating to the new astrophysics, who lectures to the general

sued under the auspices of Columbia university, which has one of the finest observatories and one of the ablest staffs of professors in the country. Five women are connected with the department. These are engaged in making calculations in regard to astral photographs. Their results are most valuable, as two of the most important of modern astronomical investigations are being prosecuted by Columbia. One of these is the determination of the north and south poles by astronomical calculations and the other the fixing of the variation of latitude. Miss Flora B. Harpham is exceptionally skillful in the use of astronomical instruments and is noted for mathematical accuracy. Her time is devoted entirely to the mathematical phase of the work under the direction of Professor J. K. Rees, who is conducting the investigation in regard to the variation of latitude, as well as several other important astronomical investigations. Four women assist Miss Harpham in the examination of the photographs and the making of measurements from these.

Miss Mary Proctor, famous as a writer and lecturer on astronomy, is the daughter of Sir Richard Proctor, one of the greatest of English astronomers. Miss Proctor now lives in New York. Her knowledge of astronomy was obtained from her father, and her advice is often sought by American astronomers.

Mrs. Mabel Loomis Todd is the wife of Professor David Todd, head of the astronomical department at Amherst



THREE WOMEN ASTRONOMERS.

eral classes on astronomy. Professor Whiting conducts her astronomical instruction as a department of applied physics.

Professor Ellen Hayes has charge of the department of mathematical astronomy and has done much fine work in the calculation of the orbits of comets. Professor Hayes and Professor Whiting received their instruction as guests of professors at celebrated observatories. Miss Whiting was first a pupil of Professor Pickering of Harvard, who deserves the gratitude of all women for the generous manner in which he has assisted them in astronomical work.

Wellesley is now having completed a handsome observatory, the gift of Mrs. John C. Whiting, one of the trustees of the college. Its architectural beauty is as notable as the completeness of its scientific equipment.

Miss Elizabeth M. Bardwell, for 22 years astronomical instructor at Mount Holyoke college and one of the notable women in her profession, died about a year ago. She became a member of the Mount Holyoke faculty in 1868, just a year after Maria Mitchell joined the faculty at Vassar. She was a member of the British Astronomical association and of other learned societies and contributed to the astronomical journals. These contributions were highly valued on account of their accuracy and charm of style. A fellowship of \$10,000 in memory of Miss Bardwell is now open to subscription. The object of the scholarship is to provide for a year's post-graduate course in the universities of Europe. This will serve to further the work of women in astronomy and will at the same time be a beautiful memorial of a good and talented woman.

The advanced work of the astronomical student at Barnard must be pur-

chase and the author of several valuable astronomical contributions. Mrs. Todd acquired her knowledge of astronomy in the observatory of her father, Professor Loomis of Washington. She has written a book on the moon. A few years ago, when Professor Todd went to Japan at the head of a government expedition to observe an eclipse of the sun, Mrs. Todd accompanied him and rendered valuable assistance. She was shown the greatest honor by the Japanese government, who put a special yacht at her command and accorded her many unusual privileges to enable her to study the Ainos, the aboriginal inhabitants of the country, about whom she has since published a charming book. ALICE DE BERDT.

LITERARY WOMEN. It has been estimated that there are in England some 540 women editors, authors and journalists, and of these a few have an income of £4,000 a year. In journalism women have met with immense success; at least one lady journalist receives a salary of £700 a year, and there are not a few who have no difficulty in making from £200 to £500. The last census in the United States showed that there were no fewer than 3,000 women engaged in literary, as apart from journalistic, work.

A PAIR OF SEASONABLE NOVELTIES.

The lace bertha, which has been illustrated for the benefit of those desirous of rettriming an evening bodice, is made from deep lace flouncing, tucked



LACE EVENING BERTHA.

and gathered in perpendicular rows. At each end the net portion of the flounce, which forms the drapery, is tightly gathered up, and the falling border neatly finished off, thus perfecting the flounce outline. A short length of the lace is then cut in half, horizontally, the upper or net half arranged as an arm drapery. The flounce half, headed by rose leaves, falls round the other arm, leaving the top visible, and at this side of the bertha a spray of roses with foliage is introduced, while the other side is finished with a velvet bow and paste buckle. The back of the bertha resembles the front, minus the velvet bow.

When fruit is served, nothing can be more appropriate than for the plates in which the dishes of berries are set to be partially covered by a doily on which clusters of berries are embroidered. The one shown in the sketch is embroidered with blackberries. For the fruit shades of blue black silk shading into deep blue should be used. The



BERRY EMBROIDERED DOILY.

usual foliage green tints are needed for the leaves and stems. The darker part of the berry will, of course, be that in the shadow, the bluish tints of silk being put on where the light strikes it. The velvetings are in lighter silk.

THE CRIB FASHIONS THE COAT THE PETTICOAT FOR BABY FLANNEL BANDS

OF ALL the elaborate exhibits in fashion's continuous fair at the moment none is more interesting than that over which the stork presides as patron saint. The wee person's wardrobe is positively gorgeous, and the coat of it astonishes even the most extravagant. Every garment must be handmade, of course, and the innumerable thread tucks, the countless insertions of real lace and the hemstitched or lace edged ruffles entail a tremendous

that it be loosely pinned. This theory will appeal to every experienced mother who long since has learned the inestimable value of the flannel strip, though appreciating the difficulty of proper adjustment when it was believed to be necessary that it should encircle baby's body tightly. The up to date band is so great an improvement upon the unmanageable length of flannel with which young mothers wrestled years ago that there should be no question about its use. Those of today are knit or woven of wool or of silk and wool and extend from the armpits well down over the abdomen. They are slipped on over the feet and are made to hug the body closely without binding in any way. They are elastic and give with every breath baby draws.

Although we are apt to discredit dress reform movements on general principles, through this medium often come some valuable health hints. For instance, long petticoats for infants were first denounced by dress reform mothers. Today they are discarded by all who understand anything of the requirements of comfortable dressing. The flannel pinning blanket and wool stockings keep the infant warm enough below the body, which is already incased in a band and shirt. Over these is needed nothing heavier than a cotton slip. When the temperature varies, a light baby blanket or shawl wrapped about the infant will supply sufficient additional warmth.

Box coats are the accepted mode for infants and are decidedly picturesque. The long, loose lines are quite in keeping with the simple method employed in cutting children's clothes.

Girls in their first corsets are ignoring the de Milo lines and instead are affecting the Russian small waist. This they obtain in a new way. After the corset is fitted they put on a tiny belt, which they buckle tightly over it and wear beneath their outer garments. This, according to one fadgeling, defines the line more clearly than does the lacing of the corset in sections by means of several strings. The corset, aided by this viselike belt, naturally assumes the curves of the coveted figure.

Parasols with half a dozen different covers to harmonize with as many different costumes are among the novelties. The parasol proper is of white or some favorite shade of silk. The covers are made of lace, chiffon or dotted mull. Lace ones are composed of the all over variety or of many ruffles. Those of chiffon are plaited, hand painted, tucked or shirred. Mull covers are plain, with a deep frill ribbon trimmed. In shop parlance we speak of the "petticoated parasol," which is a name well suited to the new and fascinating summer sunshade.

The unsuccessful legislation regard-

ing the length of hatpins has given that needful but somewhat formidable adjunct a bit of prominence. Hatpins are now manufactured on the lines of a broadsword rather than on those of a rapier. For the coars straw summer hats these are all right, but for the velvet chapeaux the inventive genius will have to try again.

Fichus and Gainsborough hats go together—that is, if you want to carry out the beginning of the century style that one sees so charmingly portrayed in fancy portraits. The prettiest fichus are those made of soft chiffon, finished with fine plaitings drawn into V shape at the waist and fastened in a bowknot. To be au fait the Gainsborough's broad brim should correspond in color, treatment and texture.

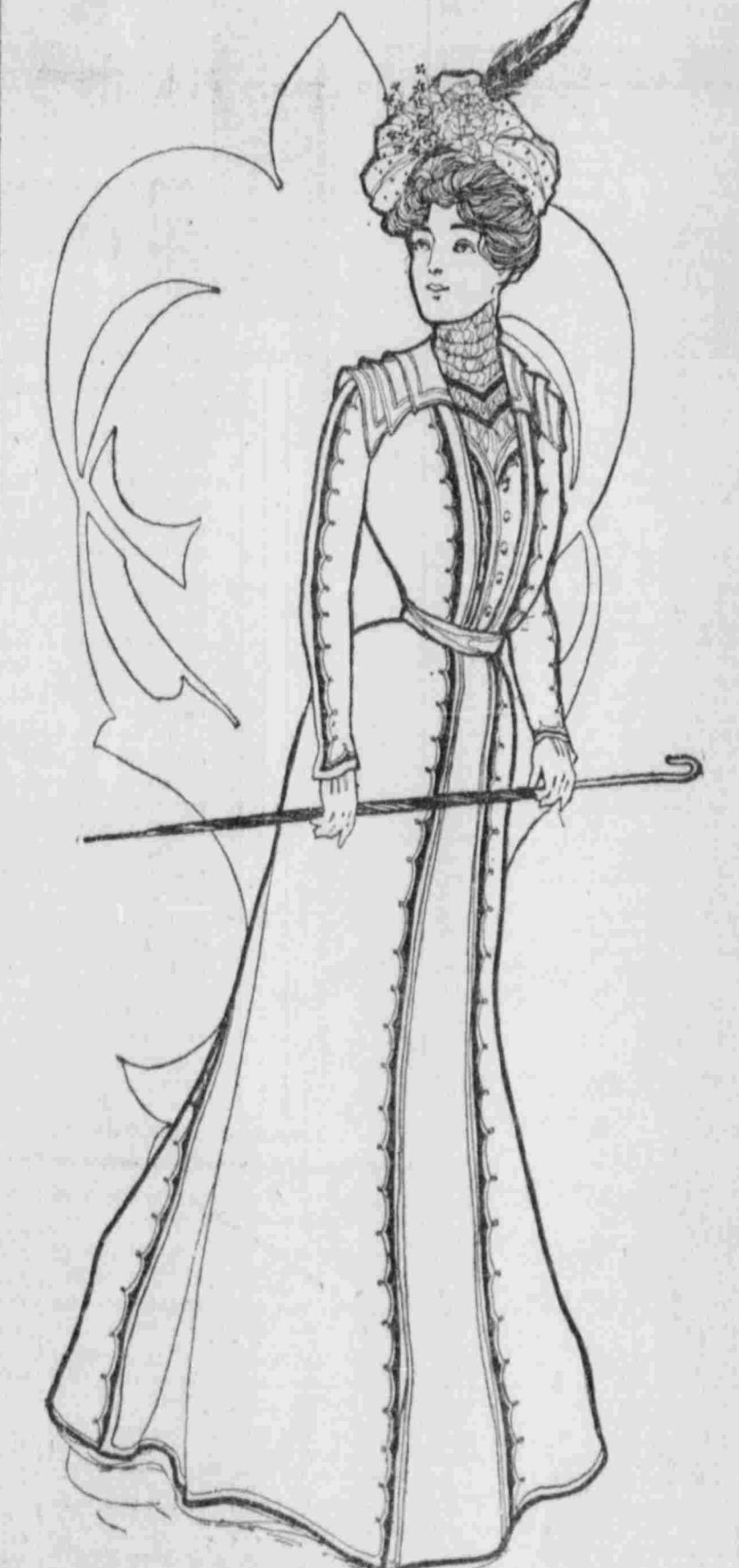
Talking of hats begets thoughts of real flowers as well as artificial ones. If you want to keep your drawing room ferns fresh for winter, give them a summer outing. Plant them in a shady corner of the yard, where the soft breezes may invigorate them. They need the holiday just as much as human beings do. An excellent plan for the housekeeper who glories in growing centerpiecees for her table is to have two at once. It is economy in the end. Then one of them can always be in the air, where it may be played and carefully nursed at the first signs of drooping.

Daisy May New York.

A PARASOL IN BLACK AND WHITE. The insides of the new parasols are as ornate as the outsides were a season or so ago. The covers, while corded and striped, embroidered and appliqued outside, are not to any extent ornament-



ed with flounces or ruchings of diaphanous material, much as that fabric is used this season. Within, however, it is quite a different story. The smartest parasols are lined with bands of ruching and rows of shirring, with a dainty, gathered piece of lace where the stick passes through the shade. This stick is nearly always handsomely carved and jeweled. One stick serves for many parasols, for a handsome one is too costly to be lightly thrown away. The frames of this year's parasols are moderately curved and of medium size.



Braid trimmings become more conspicuous on tailor gowns as the season advances. A new model showing the gored skirt lends itself well to this mode of treatment.

FOR BUSY WOMEN READERS.

Miss Flora Stevenson has been elected president of the school board in Edinburgh, Scotland, at an unusually large meeting of the board and by a unanimous vote.

Mrs. Leland Stanford has presented to Bishop Grace of Sacramento the beautiful Stanford mansion at Eighth and J streets, with an endowment fund of \$25,000, for the maintenance of the Catholic-Baptist Children's Day home. It is an old mansion but handsome.

Mrs. Charles Martin, at the recent election of the school board in Dundee, Scotland, had the largest vote

among the 15 members elected. She received 12,312 votes, and the next highest candidate 11,577. One other woman was elected and one defeated. Mrs. Martin is the wife of the editor of the Dundee Advertiser. She stood as an independent candidate, without any organization behind her, and was elected solely on the ground of competency, as she had done excellent work in school management while in Edinburgh.

In Sweden, as in England and Ireland, women can vote for all officers except members of parliament. Finland has made women eligible to

all municipal offices. This shows the liberal and progressive spirit of the brave little nation now trodden down under the heavy hoof of Russia.

Queen Victoria has three crowns, none of which is used except on extraordinary occasions. The crown which she wore in the last grand reception weighs eight ounces. It is of pure gold and set with 2,673 diamonds and with 133 rubies. The other two crowns are simple bands of gold, each set with gorgeous jewels. It is one of these latter crowns which is worn when the queen opens parliament. When she appears in the house of lords, the large crown is taken from its place among

the crown jewels in the Tower of London and borne on a velvet cushion ahead of the queen.

Mrs. Alice Gordon Gulick has been appointed dean of the women's department of the summer school at Harvard with a special view to her fitness to aid the Cuban teachers—300 women and 600 men—who are coming to study there. Mrs. Gulick has lived in Spain since 1871 and has conducted the American institute for the higher education of girls there since 1881.

Miss Ruth Cordis Long, a niece of the secretary of the navy, has taken a leaf out of Mr. Sheldon's book, "In His Steps," and has decided to use her

voice, a rich and exceptionally fine contralto, in evangelistic work.

In the province of Smolensk, Russia, there is held every three months a lottery in husbands and wives, who are chosen by the chance drawing of a lottery ticket.

Dr. Sarah Hackett Stevenson has been chosen president of the Chicago Political Equality league.

The first woman physician to practice in New Zealand is Dr. Margaret Cruickshank of Waimate. She and Dr. Emily Siedberg of Dunedin took their degree at the same time, but Dr. Cruickshank was the first to enter upon practice.

The first Mohammedan woman doctor, Mme. Bibi-Razela Koutoularova-Salimanova, has lately begun to practice at Tashkend. She obtained her medical education at St. Petersburg.

It is interesting to note that not so long ago in County Donegal, Ireland, the market price for knitting a pair of socks used to be 1 penny, and women worked cheerfully for that sum.

Mrs. Margaret E. Sangster lately addressed a New York club on "The Poetry of Daily Life." She said her first verses were written under a grapevine in a New Jersey back yard when she was 9 years old.

At the close of the year 1898 the missionaries of the China Inland mission numbered 787 and the communicants 7,385, the proportion of men to women among the latter being nearly two to one.

Marion Harland at a recent club meeting said that she was always proud of being a woman, and that she had never envied men anything but their physical strength. She confessed that she had always wanted to be able to move pianos and barrels of sugar.

One Chicago firm has orders for seven Francis Willard memorial windows from different churches and societies. Marion Harland said the other day, "There is no cure for neighborhood gossip so effectual as a club."