

## For Junior Members

### HOW TO CHOOSE BINOCULARS

Whilst price is an important factor in the choice of prismatic binoculars, this is by no means the only consideration. For bird-observing, the light-gathering power, resolving power and degree of magnification of binoculars are equally important. The primary function of a binocular is to magnify an object so that it is virtually viewed from a closer distance. However, high magnification is not always desirable. All good quality binoculars have markings which indicate the *magnification* and the diameter of the front lens or *objective glass*. For example, the inscription 7 x 50 indicates a magnification of seven times and an *objective glass* diameter of 50 mm. The degree of magnification in this case would mean that an object 700 yards away will appear to be the same size as if it were viewed with the naked eye at 100 yards distance. But a large image is of no use unless you can see detail in it. The ability of a binocular to reveal detail is known as its *resolving power*. An 8 X binocular with a 40 mm. objective glass will reveal twice as much detail as an 8 X binocular with a 20 mm. objective glass. Also the *light-gathering power* of an 8 X 40 binocular will be twice as great as that of one inscribed 8 X 20. The larger the diameter of the objective glass the greater the light-gathering power. The eyepiece of the binocular through which the image is viewed has a small circular aperture known as the *exit pupil*, whose size can be noted by holding the binocular about 12 inches from the eye. The pupil of the human eye expands in darkness. If it becomes as large as the exit pupil, then all the light passing from the binocular passes into the eye. An increase in the magnification of a binocular, beyond certain limits, results in a reduced size of the exit pupil, which makes a binocular uncomfortable to use. This disadvantage can be overcome by increasing the diameter of the objective glass, but this results in the

production of a heavy and cumbersome binocular for ordinary use. Another disadvantage with increasing magnification is a reduced field of view. The higher the magnification the smaller the field of view is a rule worth remembering; a small field of view often makes it difficult to focus on a small bird previously spotted by the naked eye.

These days nearly all binoculars have coated lenses, which gives the glass a bluish appearance or "bloom." The coating, which is obtained by depositing an exceedingly thin film, usually a fluoride, results in a brighter and more sharply-defined image because it reduces loss of light caused by successive reflections from the glass surfaces as light passes in or out of the prisms and lenses; image contrast is thus improved.

Focussing is either by a central wheel, when both eye-pieces are moved together, or each eye-piece may be turned separately. The former type is generally preferred, but the bridge connecting the two lenses must be rigid.

Some of the Japanese products are equal or even superior to certain European makes, and they are usually much cheaper in price.