tration characteristics and the implanted ion dose per cm^2, which can be determined very accurately by measuring beam current density of the system and implant time, one can calculate the profile of implanted ion concentration at varying depths. As with any particles with charges, the electromagnetic lenses and beam scanner can be used to form practically any variation of ion concentration at the substrate, and particularly to form progressive zonal lens having the optical characteristics of FIGS. 6A and 6B. Similar results can be achieved by using masks of varied density. The vision corrective effect would correspond to that produced by the posterior surface undulations in the lens of FIG. 4.

FIGS. 8A, 8B and 8C show, respectively, a corneal inlay lens, a corneal onlay lens, and an intraocular lens, each incorporating the concepts of the present invention. In the corneal inlay lens 80 of FIG. 8A, and in the corneal onlay lens 82 of FIG. 8B, the illustrated progressive zonal variations are accomplished with the variable refractive index of lens material 84, as described in conjunction with FIG. 7.

In the intraocular lens 86 of FIG. 8C, the posterior surface 88 is shown as an undulating surface having progressive zonal variations comparable to those in FIG. 4.

Any of the three lens implants of FIGS. 8A, 8B or 8C could use either the surface variations or the refractive index variations, and also could use either the anterior or posterior surface as the multifocal surface.

The implanted lenses of FIGS. 8A, 8B and 8C are subject to the same problems as are the contact lenses, e.g., pupil size variations and decentration problems. The pupil size problems are essentially the same. The decentration problems are less pronounced with implanted lenses, but are nevertheless significant because operational procedures do not insure centration, and, in the case of intraocular lenses, postoperative movement can be quite noticeable.

From the foregoing description, it will be apparent that the apparatus and methods disclosed in this application will provide the significant functional benefits summarized in tile introductory portion of the specification.

The following claims are intended not only to cover the specific embodiments disclosed, but also to cover the inventive concepts explained herein with the maximum breadth and comprehensiveness permitted by the prior art.

I claim:

1. A multifocal ophthalmic lens adapted for implantation in an eye or to be carried on a surface of an eye, said lens having a first vision correction region, said first vision correction region including a first vision correction power, a first annular progressive power region circumscribing the first vision correction region, a second annular vision correction region circumscribing the first annular progressive power region and including a second vision correction power, said second vision correction power being different from said first vision correction power and said first annular progressive power region including progressive vision correction powers which are intermediate the first and second vision correction powers, and a second annular progressive power region circumscribing the second vision correction region and including progressive vision correction powers which are intermediate the first and second vision correction powers.

2. A lens as defined in claim 1 wherein the first vision correction power is a near vision correction power.

3. A lens as defined in claim 1 wherein the first vision correction power is a far vision correction power.

4. A lens as defined in claim 1 wherein the first vision correction power is an intermediate vision correction power.

5. A lens as defined in claim 1 wherein one of the first and second vision correction powers is a near vision correction power and the other of the first and second vision correction powers is a far vision correction power.

6. A lens as defined in claim 1 wherein the lens is a contact lens.

7. A lens as defined in claim 1 wherein the lens is an intraocular lens.

8. A lens as defined in claim 1 wherein the progressive vision correction powers of said first vision correction region extend continuously between the first and second vision correction powers.

9. A multifocal ophthalmic lens adapted to be carried on or in an eye for providing vision correction power, the correction power including in a radial outward direction and in a circumscribing zone a first vision correction power, first progressive vision correction powers, a second vision correction power which is different from the first vision correction power, second progressive vision correction powers and a third vision correction power, said first and third vision correction powers both being less than or greater than the second vision correction power, said first progressive vision powers including progressive vision correction powers between the first and second vision correction powers and the second progressive vision correction powers including progressive vision correction powers between the second and third vision correction power.

10. A lens as defined in claim 9 wherein the lens has an aspheric surface which provides said progressive vision correction powers.

11. A lens as defined in claim 9 wherein the lens has a varying index of refraction which provides said progressive vision correction powers.

12. A multifocal ophthalmic lens adapted for implantation in an eye or to be carried on a surface of an eye, said lens having first and second zones with the second zone circumscribing the first zone, each of said zones having a first vision correction power, a second vision correction power which is different from the first vision correction power, and progressive vision correction powers between the first and second vision correction powers, said first vision correction power being the same in both of said first and second zones and said second vision correction power being the same in both of said first and second zones.

13. A multifocal ophthalmic lens adapted for implantation in an eye or to be carried on a surface of an eye, said lens having first and second zones with the second zone circumscribing the first zone, said first zone including in radial outwardly extending order a first vision correction power, progressive vision correction powers, a second vision correction power and progressive vision correction powers, said first and second vision correction powers being different and said progressive vision correction powers including progressive vision correction powers between the first and second vision correction powers, said second zone including in radial outwardly extending order a third vision correction power, progressive vision correction powers, a fourth vision correction power and progressive vision correction powers, said third and fourth vision correc-