windows are exchanged in accordance with the type of measurement to be conducted.

With this arrangement of the invention it has become unnecessary to exchange a light trap and a white plate, or attach a spacer to and detach it from the integrating sphere as in the prior art devices. Also the invention has solved the problem that the optical characteristic of the white plate changes as time passes and the problem that the spacer is likely to cut off a portion of the diffuse reflection component of the reflected light from the sample under measurement. Advantageously, it is possible to arrange both the sample and the reference materials close to the inner surface of the integrating sphere.

In the above description, the total reflected light from the sample always contains both the diffuse reflection and specular reflection components. If the sample is like an evaporated mirror the reflected light from which contains little or no diffuse reflection component, it is possible to measure the specular reflection of the sample by measuring the total reflected light therefrom.

What I claim is:

1. A double-beam spectrophotometer comprising:

means for providing a first and a second light beam; an integrating sphere provided with a first pair of windows in which a sample and a reference are detachably and exchangeably set and a second pair of windows so arranged relative to said first pair of windows that one of said first and second light beam entering said integrating sphere through one of said second pair of windows impinges perpendicularly on one of said sample and reference set in the corresponding one of said first pair of windows while the other of said first and second light beams entering said integrating sphere through the other of said second pair of windows impinges aslant on the other of said reference and sample set in the other of said first pair of windows; and means for measuring the light emerging from said integrating sphere and wherein one of said second pair of windows of said integrating sphere is arranged at a position diametrically opposite to one of said first pair of windows while the other of said second pair of windows is laterally displaced from the position diametrically opposite to the other of said first pair of windows.

2. The double-beam spectrophotometer of claim **1**, wherein said light beam providing means comprises means for providing a monochromatic light beam and a beam splitter for splitting said monochromatic light beam into said first and said second light beams, and wherein said measuring means comprises a photodetector for receiving the light emerging from said integrating sphere to produce a corresponding output signal, a feedback circuit connected to said photodetector, signal processing means connected to said photodetector, and switching means operable in association with said beam splitter to apply to said signal processing means said output signal from said photodetector caused by the light from said integrating sphere while one of said first and second light beams is impinging on said sample and alternately to said feedback circuit said output signal from said photodetector caused by the light from said integrating sphere while the other of said first and second light beams is impinging on said reference whereby the sensitivity of said photodetector is kept constant.

3. The double-beam spectrophotometer of claim **1**, wherein said first and second light beams cross perpendicularly to each other in said integrating sphere and one of said first pair of windows of said integrating sphere is so arranged that one of said first and second light beams impinges perpendicularly on one of said sample and reference set in said one window while the other of said first pair of windows is so arranged that the other of said first and second light beams impinges aslant on the other of said reference and sample set in said other window.

4. A double-beam spectrophotometer comprising a light source for radiating a light over a range of measuring wavelengths; a monochromator receiving said light to generate a monochromatic light of a selected wavelength; a beam splitter for splitting said monochromatic light alternately into a first and a second light beam; an integrating sphere; optical means for directing said first and second light beams to enter said integrating sphere; said integrating sphere being provided with a first pair of windows in which a sample and a reference are detachably and exchangeably set and a second pair of windows one of which is arranged at a position diametrically opposite to one of said first pair of windows while the other of said second pair of windows is laterally displaced from the position diametrically opposite to the other of said first pair of windows so that one of said first and second light beams entering said integrating sphere through said one of said second pair of windows impinges perpendicularly on one of said sample and reference set in the corresponding one of said first pair of windows while the other of said first and second light beams entering said integrating sphere through said other of said second pair of windows impinges aslant on the other of said reference and sample set in the other of said first pair of windows; a photodetector for receiving the light emerging from said integrating sphere to generate a corresponding output signal; a feedback circuit connected to said photodetector; signal processing means connected to said photodetector; and switching means operable in association with said beam splitter to apply to said signal processing means said output signal from said photodetector caused by the light from said integrating sphere while one of said first and second light beams is impinging on said sample and alternately to said feedback circuit said output signal from said photodetector caused by the light from said integrating sphere while the other of said first and second light beams is impinging on said reference whereby the sensitivity of said photodetector is kept constant.

5. An integrating sphere for use in a double-beam spectrophotometer comprising a wall for defining a spherical space, a first pair of windows in which a sample and a reference are detachably and exchangeably set and a second pair of windows so arranged relative to said first pair of windows that a first light beam entering said spherical space through one of said second pair of windows impinges perpendicularly on one of said sample and reference set in the corresponding one of said first pair of windows while a second light beam entering said integrating sphere through the other of said second pair of windows impinges aslant on the other of said reference and sample set in the other of said first pair of windows and wherein one of said second pair of windows is arranged at a position diametrically opposite to one of said first pair of windows while the other of said second pair of windows is laterally displaced from the position diametrically opposite to the other of said first pair of windows.

6. The integrating sphere of claim **5**, wherein said first and second light beams cross perpendicularly to each