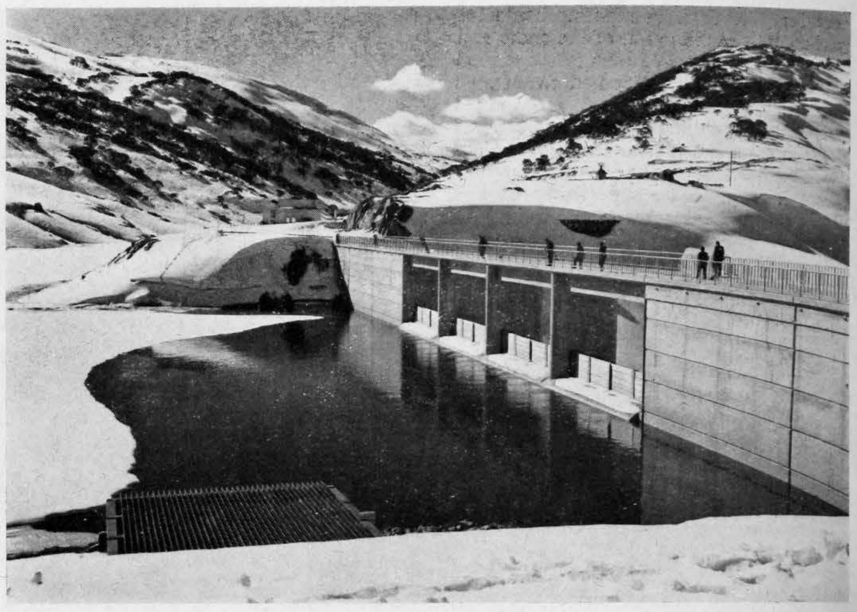
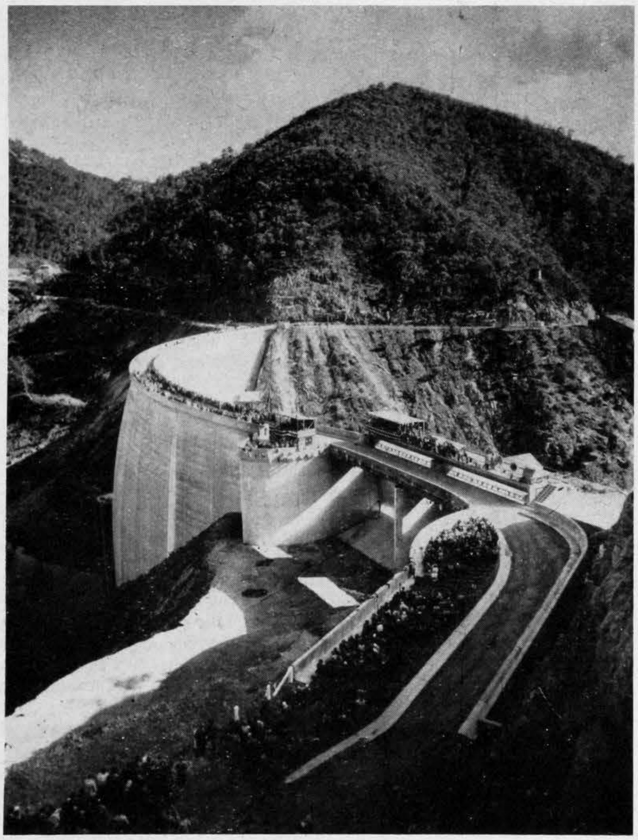
Snowy Mountains Scheme

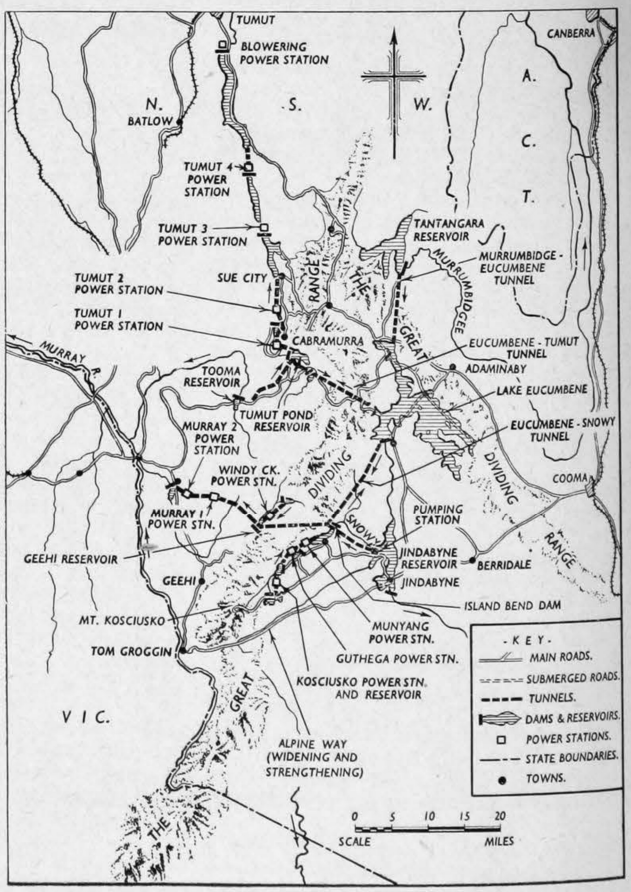
Construction of the vast complex of reservoirs, tunnels and power stations in South Eastern Australia known as the Snowy Mountains Scheme has been in progress for about a decade (see "The Engineer," June 10, 1949). Power generation and irrigation are both important aspects of the scheme, and the aim of the design has been to store the waters of the four main rivers which rise in the area of the scheme, at a high level, at the same time redistributing the flow amongst them, such that substantial additional quantities of water are diverted northwards in the Murray and Murrumbidgee (through its tributary the Tumut) to the regions where irrigation is needed. Because of this dual function, power is generated at low load factors.





Recently, the "high level diversion" between the Snowy and Murray was redesigned, to avoid constructional complications inherent in the earlier design, and also to make diversions of water from the Snowy more favourable. The present design is shown on the map BELOW. The key storage for the whole scheme is Lake Eucumbene in the Snowy catchment, with a gross capacity of 3,860,000 acre feet and a top water level 3822ft above sea level. Tantangara reservoir will store the headwaters of the Murrumbidgee and divert them into Lake Eucumbene. Utilisation of water flowing from Lake Eucumbene can then proceed in two ways. First, by diversion through the tunnel to Tumut Pond reservoir; that is, to the catchment of the Tumut River, where a straightforward chain of reservoirs and power stations stretched out along the Tumut controls its flow for irrigation further north as required, and generates power in the four stages shown. Tooma reservoir and tunnel are an addition to this system, conveniently available from the Murray catchment.

The second route from Eucumbene reservoir is more complicated. The Eucumbene-Snowy tunnel, which will be 15 miles long, will allow flow in both directions, thus permitting redistribution of the Snowy catchment's run-off to either the Murray or Tumut, as circumstances dictate. A high level chain of power stations starting at Kosciusko reservoir will discharge into Island Bend reservoir which is situated at this redistribution point. Furthermore, run-off collected from lower levels in the Snowy catchment will accumulate in Jindabyne reservoir (capacity 250,000 acre feet, top water level 3000ft above sea level) and will be pumped into the Murray system. The Jindabyne pumping station will utilise off-peak energy, since it will draw from a large reservoir; its capacity has not yet been determined. Diversion from the "redistribution point" to the Murray catchment will follow a 9½-mile tunnel under the Great Dividing Range, to Geehi reservoir, the three reservoirs at Eucumbene, Island Bend and Geehi all at substantially the same level (i.e. in the range 3600—4000ft above sea level), thus being an indispensable part of the arrangements for redistribution of flow. From Geehi reservoir there will then be a straightforward chain of power stations along the Murray, ending in a tail-race pond below the last station.



When complete, the entire scheme will provide nearly 2,000,000 acre feet of water annually in the Murray and Murrumbidgee, which will allow about 1000 square miles to be cultivated at an annual turnover of £30,000,000. The installed capacity will be about 2500MW overall, and the annual energy output 5500 × 10⁶kWh, i.e. an overall load factor of about 25 per cent. The total cost of the scheme is estimated at about £375 million. Its power stations are listed in the table herewith.

Power Stations of the Snowy Scheme

Station	Capacity MW
Snowy Catchment :	
Kosciusko	60
Guthega...	90
Munyang	60
Murray Catchment :	
Windy Creek	75
Murray 1	756
Murray 2	442
Tumut Catchment :	
Tumut 1	320
Tumut 2	280
Tumut 3	180
Tumut 4	230
Blowering	60

The first stage of the scheme to come into operation was Guthega power station shown ABOVE, which has been operating as a run of river station of 60MW capacity since 1955. The intake dam serving Guthega power station is shown at the top of page 388. These are the only works built on the Snowy River up to now. Eucumbene dam, LEFT, which is a rockfill dam with a maximum height of 381ft, was completed in 1958, and water has been accumulating in its reservoir since 1957. Tumut Pond dam, an arch structure 283ft high, shown in the second illustration on page 388, was also completed in 1958, and the tunnel supplying it with water diverted from Eucumbene reservoir was completed last year ; this tunnel has a length of 14 miles and a diameter of 23ft. The Tumut 1 underground power station, which is served by the reservoir and tunnel just named, also came into use last year ; it is illustrated RIGHT with one of the runners of its 97MW sets shown in the foreground. Tantangara dam—a concrete gravity structure—has been completed, and construction of the tunnel from Tantangara to Eucumbene reservoir is well advanced. Diversion of the Tooma into Tumut Pond reservoir is also well advanced (as recorded in our issue of June 10 last, page 988), as well as the construction of Tumut 2 power station and the various works associated with it, but the works on the Tumut downstream of Tumut 2 power station have not yet been started. Tumut 2 power station is expected to be complete in 1962, and the following year 500,000 acre feet of water will be available for diversion northwards. Construction of the first phase of the Snowy-Murray section of the scheme is due to start in the present financial year.