

WORK, ENERGY, POWER

Units 10 & 11, Dr. John P. Cise, Professor of

Physics, Austin Com. College, Northridge Campus, Austin Tx., jpcise@austincc.edu & New York Times, May 17, 2017 by Rajneesh Bhandari & Nida Najar. Dedicated to Whittaker Mountaineering Company who in the mid 1960's trained this author (Dr. Cise) on how to climb Mt Rainier (Washington State USA). Then, at the end of late August in the mid 1960s Cise joined a Whittaker climb of Mt. Rainier successfully.

Mt. Everest Beckoned, So He Climbed Without a Permit. Now He's Under Arrest.



Climbers passed a glacier at the Mount Everest base camp in Nepal last year.

KATHMANDU, Nepal — A South African filmmaker who tried to climb Mount Everest without a permit has been arrested by the Nepali police in Kathmandu, officials there said on Wednesday. The climber, Ryan Sean Davy, 43, was apprehended by a tourism official near the **Everest Base Camp (at 17,600 ft.)** earlier this month and sent to Kathmandu, where he was arrested on Tuesday. He was prevented by the police from speaking with reporters.

In addition to the charge of climbing Everest without a permit, Mr. Davy was accused of a public offense after a verbal altercation with the police. **All foreign climbers are required to obtain an \$11,000 permit that**

allows a mountaineer to climb Everest. Those caught climbing without a permit face a fine of twice the fee they were trying to evade. Fees are less for other mountains. Mr. Davy, a filmmaker, now faces a \$22,000 fine and possibly more, if he is found to have climbed any other mountains in his time in [Nepal](#). He could also be barred from the country for five years or from mountaineering in Nepal for up to 10 years, while facing jail time if he fails to pay the fine, the Nepali authorities said. The arrest is the latest evidence of the great lengths some mountaineers go to reach the peak of Mount Everest. Several hundred climbers obtain the permits every year. Mr. Davy arrived in Nepal on March 17, and received a \$55 permit to climb to the Everest Base Camp. He took a bus to Jiri, east of Kathmandu, and hiked about 50 or so miles to Everest Base Camp, a process that takes days. But he did not stop there. Though he had no permit, he climbed up through the Khumbu Icefall, a dangerous pass toward Everest

from the base camp. **"I had reached 23,000 feet after a six-hour,** fascinating, thrilling, magical, fantastical and awe-struck experience up the Ice falls, it's everything I imagined," he wrote on Facebook. "I could have stayed in there all day." Mr. Davy began his arduous journey back to the capital. On May 8, he wrote a Facebook post apologizing for what he had done, saying when he arrived at base camp, it became clear he lacked the funds for a permit.

INTRODUCTION: Goal with this application is to compute the power of this climber (**Sean Davy, weight 160 lb.**) as he climbs Mt Everest from the base camp at 17,600 ft. to 23,000 ft. In 6 hours.

QUESTION: (a) Find vertical height Davy climbed in 6 hrs.?, (b) Find 6 hrs. in units of seconds?, (c) Find HP he was doing in those 6 hrs. . Get HP in units of ft. lb./s., (d) Convert HP in ft. lb./s. to HP units ?. (e) How does your result compare with Amer. Alpine Club (see below)?

HINTS: 3600 s. = 1 hr., Power = Work/time = (gain in gravitational potential energy)/time = $m g h/t$, 550 ft. lb./s. = 1 HP,

AmerAlpineClub STATES:

The work capacity on the summit of Mount Everest is very small, being about 0.07 horsepower or 50 watts. This means that a climber of average body weight (including clothing and minimal equipment) would take about 2 minutes to climb up a slope of 10 meters vertical height. This low maximum and therefore the pressure of oxygen in the air is greatly reduced below the sea level value. The body just cannot transfer oxygen rapidly enough into the exercising muscles.

ANSWERS: (a) 5400 ft. = h , (b) t = 21,600 seconds , (c) 40 ft. lb./s. , (d) **P = ~ 0.073 HP** , (e) Your computation finding Sean Davy expelled 0.073 HP on his climb at Mt. Everest from base Camp at 17,600 ft. to 23,000 ft. seems to compare fairly well with what the American Alpine Club (at AmericanAlpineClub.org) statement at left ..that the HP of a normal climber is about 0.07 HP. Thus, physics works! Physics is a big part of the study of kinesiology.