1176-30-185 **GARETH A. JONES*** (g.a.jones@maths.soton.ac.uk), NH , United Kingdom, and **Alexander K Zvonkin** (zvonkine@gmail.com). *Klein, dessins d'enfants and projective primes.*

Klein's paper on equations of degree 11 anticipated Grothendieck's desssins d'enfants by over a century, classifying the ten dessins of degree 11 and type $(3, 2, 11)$. Motivated by this we studied dessins of prime degree p and type $(3, 2, p)$. Their monodromy groups are transitive permutation groups of prime degree, all 'known' as a result of the classification of finite simple groups: they include the projective groups $\mathrm{PSL}_n(q)$ where their natural degree $(q^n - 1)/(q - 1)$ is a prime p. It is unknown whether there are finitely or infinitely many such 'projective primes'. For $n = 2$ and $q = 2$ they are respectively the Fermat and Mersenne primes. The Bateman–Horn Conjecture suggests that for each prime $n \geq 3$ there are infinitely many projective primes p, and it provides estimates for their distribution agreeing closely with computer searches. For $n = 3$ each projective prime $p = q^2 + q + 1$ yields $(p - 1)/3e$ dessins of type $(3, 2, p)$, degree p, monodromy group $\mathrm{PSL}_3(q)$, and genus $(q - 3)(q + 1)/12$ or $q(q - 2)/12$ as q is odd or even. (Received January 22, 2022)