Ryan McGinley is hoarse. He had a bit of a party last night to launch his new shows at Team galleries in New York. The last time the photographer held a private view, in 2010, so many people turned up, there were police, sirens and threats of water cannons. This time, he thought ahead and had the road closed off, but a concert on the roof by his pal, Bradford Cox, lead singer of psychedelic rockers Deerhunter, annoyed the neighbours and along came the sirens again. Block party over.

McGinley, aged 34, is as well-known for these kinds of youthful, hipstery high-jinks as he is for his art. In fact, his art is all about youthful, hipstery high-jinks. His photographs – of hazy, spangly New York warehouse parties, sun-dappled summer road trips and nocturnal tree-climbing and cliff-jumping – have two things in common. One: everyone in them is young, good-looking and naked. And two: they all look like they’re having the time of their lives.
"I have absolutely no interest," croaks the artist, "in creating depressing images." Now gathered together in a lavish new book, there are hints of William Eggleston's vintage, washed-out Americana, of Nan Goldin's seamy snapshots of Bowery nightlife and of the candid, sexual portraits of Robert Mapplethorpe, but mainly they feel young and fresh, very now and yet weirdly timeless. Boys scamper through cornfields; girls paddle in mystical caves; boys and girls lie entwined, smoking, smiling and snogging. The images are hedonistic but not harrowing, sexy but not porny, trendily in-the-know, yet innocent. There is no dark underbelly here – only the occasional charmingly bruised thigh or black eye. They're like American Apparel adverts without the brightly coloured clothes or cynicism.

"When you're young, it's all optimism and confusion and rebellion," says McGinley. "It's a sensibility that speaks to me." Little wonder. The artist has been the golden boy of New York's photography scene for over a decade now, equally courted by MoMA and adored by the Instagram generation who e-mail him naked pictures every day, begging to be in his work. He staged his first exhibition in an abandoned SoHo gallery in 2000. One of its handmade catalogues found its way into the hands of Sylvia Wolf, curator of photography at the Whitney Museum of American Art and in 2003, aged 23, he became the youngest artist ever to have a solo show, The Kids Are Alright, at the institution.

As one of the art scene's enfants terribles, with Dan Colen and the late Dash Snow (who died of a heroin overdose, aged 27, in 2009), he gained early notoriety for his vomiting self-portraits before realising that taking pictures of his friends having fun was his strong suit. He mellowed into an enfant not-so-terrible. "I have so many friends who died from overdoses and suicide. Just having the camera, being able to pull back from situations and be an observer, it saved my life... I realised I could find these intimate moments and that people trusted me. That, basically, my camera was magic," he says.

After the Whitney show, he hired a bus, filled it with friends and drove to Vermont. He hired a summer house, set up a skate ramp and a trampoline in the back garden and started shooting. The next five summers drifted by in similar Woodstock-style field trips, as he captured his cohort of gorgeous oddballs frolicking in Arkansas wheat fields and posing moodily on Mexico's White Sands ("My favourite place in the whole world").
When he's not shooting, he joins in the fun. "Hell yeah! Those are my roots. I'm just the kid who played in the woods, climbing trees, hiding in the wheat fields, jumping on horses." He grew up in New Jersey, the youngest of eight children, and has never quite shaken off the Peter Pan role. "Everyone I'm photographing, I feel like I'm remaking a family, in a way. My brothers and sisters are my heroes. So many of my models resemble them."

Over time, he's moved from documenting his social life to orchestrated scenarios. "It's a fantasy. The world I'm making doesn't exist." He now casts his subjects as if for a film. Typically, they are aged 18 to 25 and non-professionals. "People who have no clue of how beautiful they are" – and who have no qualms about nudity. "Sometimes I'll photograph people nude and I'll only use a face portrait of them. They get really mad at me," he snickers. "I've always been interested in the body. It's endlessly fascinating. It never gets old."

At least, it doesn't in McGinley world. The joy of his pictures comes from their athleticism – people dance, spin, twist and run. Androgynous figures leap into candy-coloured voids, and hang, laughing off gravity, in mid-air. "I own a fall mat, like stuntmen use," he says. "You can jump off a roof on to it, or a small cliff, or whatever..." Nailing the spontaneous moment, though, can take hours. "I really have to connect with the person. I have to feel that sense as if you were sitting on the Tube and just watching somebody from across the way – an unselfconsciousness. To get that moment, to make it feel really effortless, actually takes a lot of work. All I do is make photos. It's my life."

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